DOCUMENT RESUME

ED 046 171 40 EC 031 255

AUTHOR Gladis, Sister Mary Paulette
TITLE The Influence of Typewriting on Selected Language Arts Skills and Motor Development of the Educable Mentally Handicapped, Volume II. Final Report.
INSTITUTION North Dakota Univ., Grand Forks.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
BUREAU NO BR-44-2199
PUB DATE Aug 70
GRANT OEG-0-70-1220(607)
NOTE 134p.

EDRS PRICE EDRS Price MF-$0.65 HC-$6.58
DESCRIPTORS Academic Achievement, *Educable Mentally Handicapped, *Exceptional Child Research, *Language Arts, Language Instruction, Mentally Handicapped, *Motor Development, Reading Skills, Spelling, *Typewriting, Vocabulary Development

ABSTRACT

The second of two volumes, the document contains the appendixes to a study which investigated the influence of typewriting on selected language arts skills and motor development of educable mentally retarded students. The academic achievement of such students in reading, vocabulary, spelling, and in motor skill development, after completing language arts programed exercises on electric typewriters instead of by hand with pen or pencil, is recorded in Volume I (see EC 031 254). The appendixes contain material on such topics as progress reports, participating schools, characteristics of subjects, typewriting materials, progress record forms, evaluation and case study forms, typewriting tests, raw data, case studies, and teachers' evaluations. (KW)

ED046171

OE/BEH
Project 44-2199
PA-40
EC

FINAL REPORT

Project No. 44-2199
Grant No. OEG-0-70-1220(607)

VOLUME II

THE INFLUENCE OF TYPEWRITING ON SELECTED LANGUAGE ARTS SKILLS AND MOTOR DEVELOPMENT OF THE EDUCABLE MENTALLY HANDICAPPED

Sister Mary Paulette Gladis
University of North Dakota
Grand Forks, North Dakota

EC 031 [redacted] 153

August 1970

Department of Health, Education, and Welfare

U.S. Office of Education
Bureau of Education for the Handicapped

EDO 46171

EC031255

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

APPENDICES

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Sister Mary Paulette Gladis
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

APPENDIX A

COPY OF LETTER FROM DR. MARIANNE FROSTIG

The Marianne Frostig Center of Educational Therapy
5981 Venice Boulevard
Los Angeles, California 90034
February 27, 1970

Sister Paulette Gladis
3006 Fifth Avenue North
Grand Forks, North Dakota 58201

Dear Sister Paulette:

I read with great interest your letter of January 22, 1970 in which you described your experimental study to determine the influence of type-writing on language arts skills and motor development of EMH children.

Although space did not permit you to fully discuss your theoretical rationale and research design, I have the impression that your program involves training in many underlying skills (sensory-motor, perceptual, language, cognitive, social and emotional) in an integrated fashion and that your study will be an important contribution.

I would greatly appreciate receiving papers, reprints, or other materials that might be forthcoming upon the completion of your project.

Sincerely,

Marianne Frostig, Ph.D.
Executive Director

MF:dj

APPENDIX B

SAMPLE OF REFERENCE CARD

Call No. | Author

Title

Bk/Mag

Twn | Pubr | Vol | Mo | Yr | PP

APPENDIX C

OUTLINE FOR PROGRESS REPORTS

SAMPLE OF COVER

SAMPLE OF TITLE PAGE

OUTLINE FOR PROGRESS REPORTS

OE Project No. Contract or Grant No.

Period_____to_____Date of Submission_____

Name of Institution:

Title of Project:

Name of Project Director(s):

Bureau of Education
for the Handicapped,
Division of Research

1. Major activities and accomplishments during this period

2. Problems*

3. Significant findings and events

4. Dissemination activities*
   (Itemize all newspaper or magazine articles or other published materials used for information or public relations purposes. A copy of each item should be attached.)

5. Capital equipment acquisitions*
   (Report capital equipment acquired in whole or in part with Federal funds, and indicate significance for research progress.)

6. Data collection*
   (Give an account of the progress made in gathering information through forms which had required review and clearance by the Bureau of Research.)

7. Other activities*

8. Staff utilization
   (Note any changes in staff personnel or staffing plans by addition, departures, or revisions of time or other commitments to the project.)

9. Future activities planned for next reporting period*

10. Certification

Signature of Contract Officer	Signature of Principal Investigator or Project Director
Date	Date

*If there is nothing to report in this section, write NONE.

SAMPLE OF COVER

_____REPORT (Type of Report)

Project No. 6-1234 (Project No.)
Grant No. OEG-1-6-057289-0766 (Grant or Contract No.)

INVESTIGATION OF TEACHING READING (Title of Report)
TO MENTALLY RETARDED STUDENTS

John R. Doe (Author)
ABC Laboratories, Inc.
405 Maple Street (Contractor or Grantee Name &
Nonsuch, Tenn. 33000 Address)

September 1971 (Date)

Department of Health, Education, and Welfare

U.S. Office of Education
Bureau of Education for the Handicapped

SAMPLE OF TITLE PAGE

_____Report (Type of Report)

Project No. _____
Grant or Contract No. _____

Title of Report

(Subtitle, if desired)

Name of author(s) (At time of conclusion of contract)

Institution

City and State

Date (Date when report is submitted)

The research reported herein was performed pursuant to a _____ (grant or contract) with the Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official position of the Bureau of Education for the Handicapped.

Department of Health, Education, and Welfare

U.S. Office of Education
Bureau of Education for the Handicapped

APPENDIX D

LIST OF PARTICIPATING SCHOOLS

COPY OF LETTER OF APPROVAL

LIST OF PARTICIPATING SCHOOLS

Cathedral School
4440 Maryland Avenue
St. Louis, Missouri 63108

Epiphany School (Rooms 1 and 2)
6580 Smiley Avenue
St. Louis, Missouri 63104

Holy Guardian Angels School
1020 St. Ange
St. Louis, Missouri 63104

St. Anthony School (Rooms 1 and 2)
3112 Meramec Street
St. Louis, Missouri 63118

St. Edward School
5626 Maffitt Avenue
St. Louis, Missouri 63112

St. Philip Neri School
5079 Queens Avenue
St. Louis, Missouri 63115

St. Pius V School
3522 Utah Avenue
St. Louis, Missouri 63118

Department of Special Education
The Archdiocese of St. Louis
4472 Lindell Boulevard
St. Louis, Mo. 63108
March 24, 1969

Sister Paulette Gladis
1600 Fifth Avenue North
Grand Forks, N.Da. 85201

Dear Sister Paulette:

I am happy to confirm my consent that you use five (5) of our special educational classrooms in the Department of Special Education, Archdiocese of St. Louis, for research purposes related to your experiment in typewriting with retarded children. I am happy to be of service and assure you I stand ready to assist in any way possible.

In reply to the questions you raise in your letter of February 25, 1969, I am enclosing a fact sheet concerning our Department which I think will answer quite precisely your questions.

Also enclosed is a biographical sketch which you requested. Use it as you see fit.

With kindest best wishes and anticipating your visit to St. Louis in the near future, I remain

Sincerely yours in Christ,

Rt. Rev. Msgr. E.H. Behrmann, Ph.D.
Associate Secretary
Special Education Dept., N.C.E.A.

EHB:sad
Encl. 2

APPENDIX E

SAMPLE OF DATA SHEET

Name of School _____ Teacher _____

Name of Student	I.Q.	M.A.	C.A.	Sex	Achievement level - Read.	Name of Reading Text and Level	Name of Speller	Type of Handicap	Coordination--Good, Fair, Poor. If poor, indicate problem

APPENDIX F

CHARACTERISTICS OF INDIVIDUAL SUBJECTS AT THE BEGINNING OF THE STUDY

TABLE 25

CHARACTERISTICS OF SUBJECTS IN THE EXPERIMENTAL GROUP
AT THE BEGINNING OF THE STUDY

Subject	Chronological Age (Months)	Mental Age (Months)	Intelligence Quotient	Grade Equivalent	Socioeconomic Status	Sex
1	154	120	78	3.5	80.5	M
2	174	145	84	4.9	70	M
3	135	84	62	1.6	70	M
4	159	117	74	4.2	77.5	F
5	116	82	70	1.6	70	M
6	157	103	66	2.7	83	F
7	170	120	71	3.4	67	F
8	136	91	67	3.6	27.5	M
9	163	117	72	3.6	80.5	M
10	167	130	78	4.7	72.5	M
11	170	119	70	3.7	65.5	F
12	128	86	67	2.5	65.5	M
13	163	121	85	4.4	75	F
14	181	149	83	5.7	65.5	F

TABLE 25--Continued

Subject	Chronological Age (Months)	Mental Age (Months)	Intelligence Quotient	Grade Equivalent	Socioeconomic Status	Sex
15	154	98	65	2.0	49.5	F
16	168	91	56	1.6	71	M
17	164	109	66	1.9	67	F
18	121	73	61	1.9	49.5	F
19	138	92	67	2.4	11	F
20	150	100	66	2.4	70	F
21	141	87	58	1.9	51.5	F
22	132	98	74	1.7	57	M
23	144	108	75	2.6	83	F
24	134	94	74	2.3	65.5	M
25	167	130	78	3.8	70	F
26	173	135	78	3.6	88	M
27	181	132	82	3.5	83	M
28	168	135	62	2.6	83	M

TABLE 26

CHARACTERISTICS OF SUBJECTS IN THE CONTROL GROUP
AT THE BEGINNING OF THE STUDY

Subject	Chronological Age (Months)	Mental Age (Months)	Intelligence Quotient	Grade Equivalent	Socioeconomic Status	Sex
1	117	75	64	1.7	70	M
2	181	130	72	5.3	70	M
3	159	124	78	3.5	70	M
4	117	85	73	2.6	83	M
5	130	79	61	3.9	83	M
6	177	124	70	2.7	65.5	M
7	151	109	72	3.5	77.5	F
8	154	102	66	2.3	65.5	M
9	171	114	67	3.2	29.5	F
10	130	96	78	2.2	83	F
11	179	109	65	2.2	49.5	M
12	153	102	67	3.1	77.5	M
13	143	103	72	4.3	49.5	M
14	102	81	81	1.7	62.5	F

TABLE 26--Continued

Subject	Chronological Age (Months)	Mental Age (Months)	Intelligence Quotient	Grade Equivalent	Socioeconomic Status	Sex
15	172	100	58	1.5	53	M
16	147	102	70	2.0	65.5	M
17	167	102	73	2.5	53	M
18	154	109	71	2.7	83	M
19	141	82	58	1.8	83	F
20	101	73	80	2.2	11	M
21	101	61	60	1.2	72.5	F
22	169	113	67	3.7	29.5	M
23	155	131	85	3.0	83	M
24	139	94	68	2.4	87	M
25	152	88	58	1.8	87	M
26	123	95	77	3.0	70	M
27	182	119	64	3.0	57	M
28	167	120	76	3.4	62.5	M

TABLE 27

CHARACTERISTICS OF MATCHED PAIRS IN GROUP A (IQ 68-83)
AT THE BEGINNING OF THE STUDY

Pair	Chronological Age (Months)		Mental Age (Months)		Intelligence Quotient		Grade Equivalent		Socioeconomic Status		Sex	
	E*	C	E	C	E	C	E	C	E	C	E	C
1	167	177	130	124	78	70	4.7	2.7	72.5	65.5	M	F
2	173	181	135	130	78	72	3.6	5.3	88	70	M	M
3	167	159	130	124	78	78	3.8	3.5	70	70	F	M
4	144	143	108	103	75	72	2.6	4.6	83	49.5	F	M
5	159	147	118	100	74	76	4.2	2.0	77.5	65.5	F	M
6	163	151	117	109	72	72	3.6	3.5	80.5	77.5	M	F
7	170	167	120	120	71	76	3.4	3.4	67	62.5	F	M
8	134	123	94	95	74	77	2.3	3.0	65.5	70	M	M
9	116	117	82	85	70	73	1.6	2.6	70	83	M	M
10	170	154	119	109	70	71	3.7	2.7	65.5	83	F	F
11	154	167	120	122	78	73	3.5	2.5	80.5	68	M	M

*Experimental and Control Groups

TABLE 28

CHARACTERISTICS OF MATCHED PAIRS IN GROUP B (IQ 52-67)
AT THE BEGINNING OF THE STUDY

Pair	Chronological Age (Months)		Mental Age (Months)		Intelligence Quotient		Grade Equivalent		Socioeconomic Status		Sex	
	E*	C	E	C	E	C	E	C	E	C	E	C
12	168	152	91	88	56	58	1.6	1.8	71	87	M	M
13	141	141	87	82	58	58	1.9	1.8	51.5	83	F	F
14	135	130	84	79	62	61	1.6	3.9	70	83	M	M
15	121	117	73	75	61	64	1.9	1.7	49.5	70	F	M
16	157	171	103	114	66	67	2.7	3.2	83	29.5	F	F
17	138	154	92	102	67	66	2.4	2.3	11	65.5	F	M
18	128	172	86	100	67	58	2.5	1.5	65.5	53	M	M
19	136	139	91	101	67	68	3.6	2.4	27.5	87	M	M
20	150	169	100	113	66	67	2.4	3.7	70	29.5	F	M
21	154	179	98	109	64	65	2.0	2.2	49.5	49.5	F	M
22	164	182	109	117	66	64	1.9	3.0	67	57	F	M

*Experimental and Control Groups

APPENDIX G

SAMPLES OF TYPEWRITING MATERIALS

BILLY AND JOHNNY and SLEEP IN THE WOODS GRADE I
Exercise 1-B

Choose the correct word and write it in the space. Check your answer and then write the complete sentence with the correct word. Double space.

(house teeny sleep)

May Johnny and I _____ in the woods?

sleep _____

(her hot help)

It is so _____ in the house.

hot _____

(wink will who)

We cannot sleep a _____.

wink _____

(take teeny thank)

No, not a _____ wink.

teeny _____

(Mother mitten mine)

You will have to ask your _____.

Mother _____

(thank tent that)

We could make a _____.

tent _____

(here help house)

Billy ran to the _____.

house _____

(woods will wink)

We want to sleep in the _____.

woods _____

GALUMPH (pp. 8-13)

GRADE II
Exercise 3-B

Choose the correct word. Put it into the sentence, then write the whole sentence again. Double space.

(cat cut cot)

1. Tony was a big golden _____.

cat

(sat sit set)

2. Galumph liked to _____near Tony's feet.

sit

(run ran)

3. Maria _____ home to eat.

ran

(bug bag big)

4. Papa put some oranges into a _____ box.

big

(bud bed bad)

5. Patty had to stay in _____all day long.

bed

(son sin sun)

6. When the _____went down, the cat jumped on Patty's bed.

sun

(dash dish)

7. Patty gave the cat some of her cake and some milk in a _____.

dish

(put pit pot)

8. Maria_____some fish on a dish for the cat.

put

PRESENTS FOR MOTHER (pp. 69-74) GRADE III
Exercise 1-A

Type the words as many times as possible in the space provided. Say each word aloud as you type it. Triple space.

---

heavy

chicken

cooked

books

write

ourselves

beamed

feather

ladder

ourselves

beamed

heavy

write

chicken

beamed

THE YELLOW SHOP (pp. 8-21)

GRADE V
Exercise 2-B

Type the word that makes the best sense in the blank space in each sentence. Then type the entire sentence next to the correct answer. Double space.

(trash slash flash)

1. He used his knife to _____ open the sack.

slash

(budge judge grudge)

2. Since their fight, Bob held a _____ against Jim.

grudge

3. It was difficult to find anything because the room was
(sputtered muttered cluttered)
so _____.

cluttered

(tumbled fumbled grumbled)

4. Mary slipped on the wet spot and _____ to the floor.

tumbled

(land lend mend)

5. Mary asked Alice to _____ her a dime.

lend

(batch latch hatch)

6. Mother made a fresh _____ of cookies today.

batch

(mellow bellow yellow)

7. The fruit had a _____ taste.

mellow

APPENDIX H

SAMPLE OF PROGRESS RECORD FORM

PROGRESS RECORD

Name_____School_____Date_____

I. GENERAL

A. What problems have you experienced:

1. With the materials:

2. With the typewriters:

3. With pupils typewriting:

B. What suggestions would you have to overcome these problems:

1. With the materials:

2. With the typewriters:

3. With pupils typewriting:

C. Has there been any change in the enrollment of pupils in the experimental or control groups?

PROGRESS RECORD

Name_____School_____Date_____

II. MATERIALS

Name of Book_____

1. What is your reaction to the format of the materials in this book?

2. Do you have enough material for each day's lesson?

3. Have you altered the materials for more practical results? If so, how?

4. Have you used the device of coloring (or having the pupils color) the keys on the keyboard in the book, Typing Fun, as each new key is introduced?

5. Have you used the charts contained in Typing Fun after the first eight weeks of preliminary typewriting?

III. REACTIONS

A. Pupil

1. How do the pupils in the experimental group respond to:

a. Materials:

b. Typewriting:

2. What has been the pupils' reaction to the colored plastic rings? How long were they used?

PROGRESS RECORD

Name_____School_____Date_____

III. REACTIONS (Continued)

A. Pupils (Continued)

3. How have the pupils in the control group responded to the typewriting activity which is taking place?

4. Has there been any noticeable improvement in the performance of the pupils in the experimental group over those in the control group in their other school subjects? In their attitude? Explain. (Use back side)

5. What has been the reaction to the colored tape on the typewriter keys? Has it helped the pupils to use the correct fingers on the keys?

IV. PUBLICITY

Has your class received any publicity concerning the typewriting project (perhaps in a parish or neighborhood publication)? If so, please attach a copy of the news item.

V. METROPOLITAN ACHIEVEMENT TESTS

On what date do you plan to administer the Metropolitan Achievement Test for Reading, Comprehension, Spelling, and Vocabulary? (Form A is to be administered after the completion of Typing Fun; that is, after 40 lessons in preliminary typewriting. Form B is to be administered at the completion of 100 lessons of typewriting to improve the selected language arts skills.)

VI. TEACHER AIDES

A. Have you employed a teacher aide specifically to assist you while you are teaching typewriting?

B. If so, how much time is the teacher aide employed each week?

VII. MISCELLANEOUS

Please comment on the back of this sheet on any other problems or suggestions concerning this study.

APPENDIX I

BIOGRAPHICAL SKETCHES OF CONSULTANTS

Rt. Rev. Monsignor Elmer H. Behrmann

Monsignor Elmer H. Behrmann received his B.A. from Kenrick Seminary, St. Louis, Missouri, and his M.A. and Ph.D. degrees from St. Louis University, St. Louis, Missouri. He was an instructor in educational psychology from 1950 to 1954. In 1950, Monsignor Behrmann founded the Department of Special Education in the Archdiocese of St. Louis, Missouri, and 1952, St. Mary's Special School, St. Louis, Missouri. St. Mary's Special School is a residential school which offers training for retarded children and others with serious learning disabilities. From 1950 to 1958, Monsignor Behrmann was the assistant superintendent of elementary schools in the Archdiocese of St. Louis, Missouri. His professional appointments include the following: President's Panel on Mental Retardation; The Joseph P. Kennedy, Jr. Foundation's Selection Committee for International Awards Program; Task Force to Study Mental Retardation in Denmark and Sweden; U. S. Department of Health, Education and Welfare Advisory Committee on grants for colleges and universities with teacher-training programs in the field of mental retardation.

Dr. Steven D. Harlow

Dr. Steven D. Harlow received his B.A. and M.A. degrees from Adams State College, and his Ph.D. from the University of Nebraska in Special Education in 1967. He served as a counselor and teacher of modified classes in the Denver Public Schools in 1963-64, taught at the University of Nebraska from 1964 to 1966. From 1967 to the present, Dr. Harlow has been the Director of Special Education Division and Educational Psychologists with the Evaluation Center of the University

of North Dakota, Grand Forks, North Dakota. His publications include the following: "Use of F Test, An Example Using Special Education Treatments," The College of Education Record, University of North Dakota, 1967; "A Note on Learning Disabilities," The College of Education Record, University of North Dakota, May, 1969; John Williams and Steven D. Harlow, Action Research, William Brown, 1969.

Dr. John W. Kidd

Dr. John W. Kidd is assistant superintendent, Department for the Mentally Retarded, Special School District of St. Louis County, Missouri, adjunct Professor of Psychology and Research Associate, Social Science Institute, Washington University, St. Louis, Missouri. He received his bachelor's and master's degrees from Louisiana State University, and his doctorate from Michigan State University in 1951 in Education Administration and Supervision and Social Psychology. Dr. Kidd is currently vice-president, education division, American Association on Mental Deficiency, and Councilor (Board of Governors), American Association on Mental Deficiency, as well as consultant, Aid to States Branch, Bureau of Education for the Handicapped, U.S. Office of Education. He served as president of the Council for Exceptional Children and as a member of the President's Committee on Employment of the Handicapped in 1968-69. His publications include approximately fifty professional articles; author, editor, co-editor, co-author of eight books; three book reviews.

Dr. John L. Rowe

Dr. John L. Rowe received his Bachelor of Education degree from Wisconsin State University, Whitewater, Wisconsin; his master's degree from the State University of Iowa, Iowa City; and his doctorate

from Teacher's College, Columbia University, with majors in Business Education and Teacher Education. Dr. Rowe's teaching experience includes the following: Associate Professor of Business Education at Boston University; Teacher's College, Columbia University; Professor of Business Education at Northern Illinois University, DeKalb, Illinois; and University Professor and Chairman of the Department of Business Education, University of North Dakota (present position); as well as numerous visiting professorships. Currently, Dr. Rowe is President of the Catholic Business Education Association, Midwest Unit. He served as President of the National Association for Business Teacher Education, 1957-58; Executive Board Member (three-year term), United Business Education Association, a division of the National Education Association, 1949-52; and Executive Board Member (three-year term), Eastern Business Teacher's Association, 1949-52.

Dr. Rowe's publications include over 30 textbooks and workbooks, and approximately 150 professional articles and research abstracts. He was the Typewriting Editor, UBEA Forum, for seven years, and editor of the 1956 American Business Education Yearbook, Curriculum Patterns in Business Education.

APPENDIX J

SAMPLE OF EVALUATION FORM

EVALUATION

Name_____School_____

Please comment on the following questions in as much detail as possible. The reverse side of this sheet may be used if necessary. Bring this form to the meeting on March 17, 1970. Thank you very much.

1. What changes have occurred in the experimental group as a result of the typewriting program?

2. What changes have occurred in the control group as a result of the typewriting program?

3. What changes have occurred in the group which did not participate in either the experimental or control group in your class as a result of the typewriting program?

4. What was your attitude toward the program before it began?

5. What is your attitude toward the program at the present time?

APPENDIX K

SAMPLE OF CASE STUDY FORM

Name_____Age_____IQ_____

Grade Level_____MA_____

Family History:

Educational Experiences:

Social-Personal Characteristics:

Level of Accomplishment:

Changes which have occurred as a result of typewriting:

Use reverse side if necessary. Any additional information will be appreciated. This material will be held confidential and used only for the research. The child will not be identified by name or school.

APPENDIX L

SAMPLES OF CERTIFICATES OF ACHIEVEMENT

CERTIFICATE OF ACHIEVEMENT

This is to certify that

has completed the Language Arts Typewriting Course at

and has achieved modified touch typewriting skill.

Chairman, Department of Business Education, University of North Dakota	Teacher
Date	Chief Investigator, Fontbonne College

This study was conducted through the
Department of Business Education
University of North Dakota

C E R T I F I C A T E O F A C H I E V E M E N T

This is to certify that

has participated in the experimental study at

and has completed the programmed language arts materials

Chairman, Department of Business Education, University of North Dakota

Teacher

Date

Chief Investigator, Fontbonne College

This study was conducted through the Department of Business Education University of North Dakota

APPENDIX M

SAMPLE OF FINAL TYPEWRITING TEST

FIRST MINUTE

Name_____ Date_____

School_____ Teacher_____

Directions: Type this sentence as many times as you can in one minute (60 seconds). Begin as soon as your teacher tells you to start. Stop as soon as your teacher tells you to stop, even if you are in the middle of a word.

Let me tell you what I think a hat is.

SECOND MINUTE

Name_____ Date_____

School_____ Teacher_____

Directions: Type this sentence as many times as you can in one minute (60 seconds). Begin as soon as your teacher tells you to start. Stop as soon as your teacher tells you to stop, even if you are in the middle of a word.

Let me tell you what I think a hat is.

THIRD MINUTE

Name _____ Date _____

School _____ Teacher _____

Directions: Type this setnence as many times as you can in one minute (60 seconds). Begin as soon as your teacher tells you to start. Stop as soon as your teacher tells you to stop, even if you are in the middle of a word.

Let me tell you what I think a hat is.

APPENDIX N

COPY OF PRESTIGE OCCUPATIONAL SCALE

PRESTIGE OCCUPATIONAL SCALE

Occupation	MARCH, 1947								JUNE, 1963							
	Excellent	Good	Average	Below avg.	Poor	Don't know	NORC score	Rank	Excellent	Good	Average	Below avg.	Poor	Don't know	NORC score	Rank
	%	%	%	%	%	%			%	%	%	%	%	%		
U.S. Supreme Ct. Justice	83	15	2	*	*	3	96	1	77	18	4	1	1	1	94	1
Physician	67	30	3	*	*	1	93	2.5	71	25	4	*	*	1	93	2
Nuclear physicist	48	33	11	1	1	51	85	18	70	23	5	1	1	10	92	3.5
Scientist	53	38	8	1	*	7	89	8	68	27	5	*	*	2	92	3.5
Government scientist	51	41	7	1	*	6	88	10.5	64	30	5	*	1	2	91	5.5
State governor	71	25	4	*	*	1	93	2.5	64	30	5	*	1	1	91	5.5
Cabinet member in the Federal Government	66	28	5	1	*	6	92	4.5	61	32	6	1	1	2	90	8
College professor	53	40	7	*	*	1	89	8	59	35	5	*	*	1	90	8
U.S. Representative in Congress	57	35	6	1	1	4	89	8	58	33	6	2	*	2	90	8
Chemist	42	46	9	1	*	7	86	18	54	38	6	*	*	3	89	11
Lawyer	44	45	9	1	1	1	86	18	53	38	8	*	*	*	89	11
Diplomat in the U.S. Foreign Service	70	24	4	1	1	9	92	4.5	57	34	7	1	1	3	89	11
Dentist	42	48	9	1	*	*	88	18	47	47	6	*	*	*	88	14
Architect	42	48	9	1	*	6	86	18	47	45	6	*	*	2	88	14
County judge	47	43	9	1	*	1	87	13	50	40	8	1	*	1	88	14
Psychologist	38	49	12	1	*	15	85	22	49	41	8	1	*	6	87	17.5
Minister	52	35	11	1	1	1	87	13	53	33	13	1	1	1	87	17.5
Member of the board of directors of a large corporation	42	47	10	1	*	5	88	18	42	51	6	1	*	1	87	17.5
Mayor of a large city	57	36	6	1	*	1	90	5	46	44	9	1	1	*	87	17.5
Priest	51	34	11	2	2	6	86	18	52	33	12	2	1	6	89	21.5
Head of a dept. in a state government	47	44	8	*	1	3	87	13	44	48	6	1	1	1	86	21.5
Civil engineer	33	55	11	1	*	5	84	23	40	52	8	*	*	2	86	21.5
Airline pilot	35	48	15	1	1	3	83	24.5	41	48	11	1	*	1	86	21.5
Banker	43	43	8	*	*	1	88	10.5	39	51	10	1	*	*	85	24.5
Biologist	29	51	18	1	1	16	81	29	38	50	11	*	*	8	85	24.5
Sociologist	31	51	16	1	1	23	82	26.5	35	48	15	1	1	10	83	26
Instructor in public schools	26	48	24	2	1	1	79	34	30	53	16	1	*	*	82	27.5
Captain in the regular army	28	49	19	2	2	2	80	31.5	28	55	16	2	*	1	82	27.5
Accountant for a large business	25	57	17	1	*	3	81	29	27	55	17	1	*	*	81	29.5
Public school teacher	26	45	24	3	2	*	78	36	31	46	22	1	*	*	81	29.5
Owner of a factory that employs about 100 people	30	51	17	1	1	3	82	26.5	28	49	19	2	1	1	80	31.5
Building contractor	21	55	23	1	*	1	79	34	22	56	20	1	*	*	80	31.5
Artist who paints pictures that are exhibited in galleries	40	40	15	3	2	6	83	24.5	28	45	20	5	2	4	78	34.5
Musician in a symphony orchestra	30	45	19	3	1	5	81	29	25	45	25	3	1	3	78	34.5
Author of novels	32	44	19	3	2	9	80	31.5	25	46	22	4	2	5	78	34.5
Economist	25	49	24	2	1	22	78	34	20	53	24	2	1	12	78	34.5
Official of an international labor union	26	40	20	5	3	11	75	40.5	21	53	18	5	3	5	77	37
Railroad engineer	22	45	30	3	*	1	77	37.5	18	47	30	3	1	1	76	38
Electrician	15	38	43	4	*	1	73	40	18	45	34	2	*	*	76	39
County agricultural agent	17	53	28	2	*	5	77	37.5	13	54	30	2	1	4	76	39
Owner-operator of a printing shop	13	46	38	3	*	2	74	42.5	13	51	34	2	*	2	75	41.5
Trained machinist	14	43	38	5	*	2	73	45	15	50	32	4	*	*	75	41.5
Farm owner and operator	19	46	31	3	1	1	78	39	18	43	33	3	*	1	74	44
Undertaker	14	43	36	5	2	2	72	47	16	44	33	3	2	3	74	44
Welfare worker for a city government	16	43	35	4	2	4	73	45	17	44	32	3	2	2	74	44
Newspaper columnist	13	34	32	3	1	5	74	42.5	10	43	36	3	1	1	73	46
Policeman	11	33	44	11	2	1	67	55	10	38	37	6	2	*	72	47
Reporter on a daily newspaper	9	43	43	4	1	2	71	48	3	45	44	3	1	1	71	48
Radio announcer	17	45	33	3	*	2	75	40.5	9	42	44	3	1	1	70	49.5
Bookkeeper	8	31	55	6	*	1	68	51.5	9	40	45	5	1	*	70	49.5
Tenant farmer -- one who owns livestock and machinery and manages the farm	10	37	40	11	2	1	68	51.5	11	37	42	8	3	1	69	51.5
Insurance agent	7	34	53	4	2	2	68	51.5	5	42	47	5	2	*	70	51.5
Carpenter	5	28	56	10	1	*	60	58	7	36	49	6	1	*	68	53
Manager of a small store in a city	5	40	50	4	1	1	68	49	3	40	48	7	2	*	67	54.5
A local official of a labor union	7	26	41	16	5	11	62	60	6	36	42	6	5	4	67	54.5

PRESTIGE OCCUPATIONAL SCALE--Continued

Occupation	MARCH, 1947 Excellent %	Good %	Average %	Below avg. %	Poor %	Don't know[b] %	NORC score	Rank	JUNE, 1963 Excellent %	Good %	Average %	Below avg. %	Poor %	Don't know[d] %	NORC score	Rank
Mail carrier	8	28	54	10	2	*	66	57	7	29	53	10	1	*	66	57
Railroad conductor	8	30	52	9	1	1	67	55	6	33	48	10	3	*	66	57
Traveling salesman for a wholesale concern	6	35	53	5	1	2	68	51.5	4	33	54	7	3	2	66	57
Plumber	5	24	55	14	2	1	63	59.5	6	29	54	9	2	*	65	59
Automobile repairman	5	21	58	14	2	*	63	59.5	5	25	56	12	2	*	64	60
Playground director	7	33	48	10	2	4	67	55	6	29	46	15	4	3	63	62.5
Barber	3	17	56	20	4	1	59	66	4	25	56	13	2	1	63	62.5
Machine operator in a factory	4	20	53	20	3	2	60	64.5	6	24	51	15	4	1	63	62.5
Owner-operator of a lunch stand	4	24	55	14	3	1	62	62	4	25	57	11	3	1	63	62.5
Corporal in the regular army	5	21	48	20	6	3	60	64.5	6	25	47	15	6	2	62	65.5
Garage mechanic	4	21	57	17	1	*	62	62	4	22	56	15	3	*	62	65.5
Truck driver	2	11	49	29	9	*	54	71	3	18	54	19	5	*	59	67
Fisherman who owns his own boat	3	20	48	21	8	7	58	68	3	19	51	19	8	4	58	68
Clerk in a store	2	14	61	20	3	*	58	68	1	14	56	22	6	*	58	70
Milk route man	2	10	52	29	7	1	54	71	3	12	55	23	7	1	56	70
Streetcar motorman	3	16	55	21	5	2	58	68	3	16	46	27	6	2	56	70
Lumberjack	2	11	48	29	10	8	53	73	2	16	46	29	7	3	55	72.5
Restaurant cook	3	13	44	29	11	1	54	71	4	15	44	26	11	*	55	72.5
Singer in a nightclub	3	13	43	23	18	6	52	74.5	3	16	43	24	14	3	54	74
Filling station attendant	1	9	48	34	8	1	52	74.5	2	11	41	34	11	*	51	75
Dockworker	2	7	34	37	20	8	47	81.5	2	9	43	33	14	3	50	77.5
Railroad section hand	2	9	35	33	21	3	48	79.5	3	10	39	29	18	2	50	77.5
Night watchman	3	8	33	35	21	1	47	81.5	3	10	39	32	17	1	50	77.5
Coal miner	4	11	33	31	21	2	49	77.5	3	13	34	31	19	2	50	77.5
Restaurant waiter	2	8	37	36	17	1	48	79.5	2	8	42	32	16	*	49	80.5
Taxi driver	2	8	38	35	17	1	49	77.5	2	8	39	31	18	1	49	80.5
Farm hand	3	12	35	31	19	1	50	76	3	12	31	32	22	*	48	83
Janitor	1	7	30	37	25	1	44	85.5	1	9	35	35	19	1	48	83
Bartender	1	6	32	32	29	4	44	85.5	1	7	42	28	21	2	48	83
Clothes presser in a laundry	2	6	35	36	21	2	45	83	2	7	31	38	22	1	45	85
Soda fountain clerk	1	5	34	40	20	2	45	84	*	5	30	44	20	1	44	86
Share-cropper — one who owns no livestock or equipment and does not manage farm	1	3	24	23	41	3	40	87	1	3	26	28	37	3	42	87
Garbage collector	1	4	16	26	53	2	35	88	2	5	21	32	41	1	39	88
Street sweeper	1	3	14	29	53	1	34	89	1	4	17	31	46	1	35	89
Shoe shiner	1	2	13	28	56	2	33	90	*	3	15	30	51	2	34	90
AVERAGE	22%	31%	30%	11%	7%	4%	70		22%	32%	29%	11%	6%	2%	71	

* Less than one-half on one percent.
[a] Bases for the 1947 occupational ratings are 2,920 less "don't know" and not answered for each occupational title.
[b] Base is 2,920 in all cases.
[c] Bases for the 1963 occupational ratings are 651 less "don't know" and not answered for each occupational title.
[d] Base is 651 in all cases.

Source of 1947 distributions: Albert J. Reiss, Jr., and others, *Occupations and Social Status* (New York: Free Press of Glencoe, 1961), Table II-6.

APPENDIX O

SAMPLE OF INTERMEDIATE TYPEWRITING TESTS

Name of Pupil_____ School _____

Teacher_____ Date November 10, 1969

First minute

It is fun to run and hop and jump.

- -

Second minute

It is fun to run and hop and jump.

- -

Third minute

It is fun to run and hop and jump.

Name of Pupil_____ School_____

Teacher_____ Date December 18, 1969

First minute

Let me see who you are.

- - - -

APPENDIX P

RAW DATA

TABLE 29

INDIVIDUAL RAW SCORES OF EXPERIMENTAL GROUP FOR LANGUAGE ARTS

Subject	Reading			Spelling			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	20	26	6	12	23	9	17	31	13
2	20	25	5	45	44	-1	27	30	3
3	15	31	16	..	..	..	30	31	1
4	26	31	5	30	32	2	28	25	-3
5	25	42	17	23	26	3	18	25	7
6	28	32	4	21	18	-3	21	20	-1
7	19	24	5	18	20	2	18	29	11
8	21	24	3	19	25	6	18	34	16
9	21	19	-2	34	37	3	25	27	2
10	30	27	-3	35	36	1	40	40	..
11	22	26	4	25	35	10	26	31	5
12	11	21	10	4	7	3	12	10	-2
13	28	35	7	19	28	9	37	39	2
14	24	24	..	29	46	17	32	38	6

TABLE 29--Continued

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
15	27	40	13	. .	. .	. .	26	31	5
16	16	20	4	. .	. .	. .	16	20	4
17	23	27	4	. .	. .	. .	16	24	8
18	24	32	8	. .	. .	. .	23	25	2
19	23	39	6	20	27	7	20	23	3
20	23	40	17	24	27	3	23	23	. .
21	23	43	20	. .	. .	. .	23	28	5
22	18	41	22	. .	. .	. .	25	33	8
23	27	42	15	20	23	3	23	32	9
24	21	35	14	15	20	5	19	17	-2
25	23	19	-4	18	29	11	18	26	8
26	21	23	2	13	17	4	24	23	-1
27	20	31	11	14	22	8	18	18	. .
28	26	21	-5	11	8	-3	13	16	3

*Subjects at the first grade level did not take the spelling test.

TABLE 30

INDIVIDUAL RAW SCORES OF CONTROL GROUP FOR LANGUAGE ARTS

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	18	40	22	. .	. .	. .	26	32	6
2	22	31	9	41	40	-1	34	36	2
3	20	22	2	25	28	3	24	34	10
4	26	26	. .	13	20	7	22	24	2
5	24	18	-6	39	37	-2	29	35	6
6	13	14	1	37	29	-8	32	30	-2
7	20	22	2	26	32	6	20	23	3
8	9	16	7	16	25	9	16	21	5
9	17	23	6	39	40	1	37	36	-1
10	19	16	-3	19	21	2	17	20	3
11	20	23	3	1	5	4	13	19	3
12	16	21	5	14	21	7	17	17	. .
13	27	33	6	26	32	6	40	42	2
14	17	19	2	. .	. .	. .	27	31	4

TABLE 30--Continued

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
15	13	22	9	. .	. .	. .	28	26	-2
16	28	36	8	. .	. .	. .	31	27	-4
17	35	40	5	. .	. .	. .	27	34	7
18	32	42	10	15	28	13	13	25	12
19	20	8	-12	. .	. .	. .	19	29	10
20	20	39	19	30	29	-1	27	37	10
21	7	30	23	. .	. .	. .	12	15	3
22	13	14	1	11	13	2	11	19	8
23	16	21	5	17	28	11	26	32	5
24	23	37	14	17	21	4	19	22	3
25	11	19	8	7	11	4	11	20	9
26	33	41	8	14	23	9	16	24	8
27	15	16	1	12	9	-3	10	15	5
28	19	21	2	21	25	4	23	27	4

*Subjects at the first grade level did not take the spelling tests.

TABLE 31

INDIVIDUAL GRADE EQUIVALENTS FOR EXPERIMENTAL GROUP FOR LANGUAGE ARTS

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	3.5	3.9	.4	3.1	4.0	.9	3.0	4.1	1.1
2	4.9	6.3	1.4	7.8	8.4	.6	5.3	5.5	.2
3	1.6	2.1	.5		. .	. .	2.2	2.4	.2
4	4.2	4.4	.2	4.8	5.0	.2	4.0	3.6	.4
5	1.6	3.9	2.3	3.4	4.0	.6	2.4	2.9	.5
6	2.7	2.7	. .	3.0	2.6	-.4	2.7	2.5	-.2
7	3.4	3.7	.3	3.8	3.8	. .	3.1	3.8	.7
8	3.6	3.7	.1	3.9	4.2		3.1	4.5	1.4
9	3.6	3.3	.3	5.3	6.0	.7	3.7	3.7	. .
10	4.7	4.0	-.7	5.5	5.7	.2	5.4	5.7	.3
11	3.7	3.9	.2	4.4	5.5	1.1	3.8	4.1	.3
12	2.5	3.4	.9	2.3	2.5	.2	2.6	2.2	-.4
13	4.4	5.1	.7	3.9	4.7	.8	5.0	5.4	.4
14	5.7	6.1	.4	5.5	8.7	3.2	5.8	6.6	.8

TABLE 31--Continued

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
15	2.0	2.9	.9	. .	. .	. .	1.9	2.4	.5
16	1.6	1.8	.2	. .	. .	. .	1.6	1.7	.1
17	1.9	2.0	.1	. .	. .	. .	1.6	1.8	.2
18	1.9	2.2	.3	. .	. .	. .	1.8	1.8	. .
19	2.4	3.3	.9	2.9	4.2	1.3	2.6	2.7	.1
20	2.4	3.3	.9	3.6	4.2	.6	2.8	2.7	-.1
21	1.9	3.4	1.5	. .	. .	. .	1.8	2.0	.2
22	1.7	3.0	1.3	. .	. .	. .	1.9	2.7	.8
23	2.6	3.5	.9	2.9	3.4	.5	2.8	3.7	.9
24	2.3	3.0	.7	2.3	2.9	.6	2.5	2.2	-.3
25	3.8	3.3	-.5	3.8	4.8	1.0	3.1	3.7	.6
26	3.6	3.6	. .	3.3	3.5	.2	3.6	3.4	-.2
27	3.5	4.4	.9	3.5	4.0	.5	3.1	2.9	-.2
28	2.6	2.2	-.4	2.1	1.9	-.2	2.0	2.2	.2

*Subjects at the first grade level did not take the spelling tests.

TABLE 32

INDIVIDUAL GRADE EQUIVALENTS OF CONTROL GROUP FOR LANGUAGE ARTS

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	1.7	2.9	1.2	. .	. .	. .	1.9	2.5	.6
2	5.3	8.0	2.7	7.1	7.3	.2	6.2	6.4	.2
3	3.5	3.5	. .	4.4	4.7	.3	3.6	4.5	.9
4	2.6	2.4	-.2	2.2	2.9	.7	2.7	2.8	.1
5	3.9	3.2	-.7	6.8	6.0	-.8	4.1	4.7	.6
6	2.7	2.8	.1	6.2	4.8	-1.4	4.5	4.0	-.5
7	3.5	3.5	. .	4.6	5.0	.4	3.2	3.4	.2
8	2.3	3.0	.7	3.6	4.2	.6	2.9	3.1	.2
9	3.2	3.6	.4	6.8	7.9	1.1	5.0	4.8	-.2
10	2.2	2.0	-.2	2.7	3.0	.3	2.3	2.5	.2
11	2.2	2.2	. .	1.0	1.4	.4	2.0	2.3	.3
12	3.1	3.4	.3	3.5	3.9	.4	3.0	2.8	-.2
13	4.3	4.7	.4	4.6	5.0	.4	5.4	6.1	.7
14	1.7	1.7	. .	. .	. .	. .	1.9	2.4	.5

TABLE 32--Continued

Subject	Reading			Spelling*			Vocabulary		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
15	1.5	1.8	.3	. .	. .	. .	2.0	1.9	-.1
16	2.0	2.5	.5	. .	. .	. .	2.4	1.9	-.5
17	2.5	2.9	.4	. .	. .	. .	1.9	2.9	1.0
18	2.7	3.5	.8	2.3	4.4	2.1	2.0	2.9	.9
19	1.8	1.3	-.5	. .	. .	. .	1.7	2.1	.4
20	2.2	3.3	1.1	4.9	4.9	. .	[illegible].1	3.7	.6
21	1.2	2.1	.9	. .	. .	. .	1.5	1.6	.1
22	3.7	4.0	.3	3.3	3.6	.3	3.4	4.3	.9
23	3.0	3.4	.4	3.5	4.7	1.2	3.7	4.3	.6
24	2.4	3.2	.8	2.5	3.0	.5	2.5	2.7	.2
25	1.8	2.1	.3	1.9	2.1	.2	1.9	2.5	.6
26	3.0	3.4	.4	2.3	3.4	1.1	2.2	2.8	.6
27	3.0	3.0	. .	3.1	2.7	-.4	2.4	2.7	.3
28	3.4	3.4	. .	4.0	4.2	.2	3.5	3.7	.2

*Subjects at the first grade level did not take the spelling tests.

TABLE 33

COMPARISON OF MATCHED PAIRS IN GROUP A (IQ 68-83)
RAW SCORES OF READING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	30	27	-3	13	14	1
2	21	23	2	22	31	9
3	23	19	-4	20	22	2
4	27	42	15	27	33	6
5	26	31	5	28	36	8
6	21	19	-2	20	22	2
7	19	24	5	19	21	2
8	21	35	14	33	41	8
9	25	42	18	26	26	. .
10	22	26	4	32	42	10
11	20	26	6	35	40	5
Total Actual Differences			60			62
Actual Mean Differences			5.45			5.63
			t = .0779			

TABLE 34

COMPARISON OF MATCHED PAIRS IN GROUP B (IQ 52-67)
RAW SCORES OF READING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12	16	20	4	11	19	8
13	23	43	20	20	8	-12
14	15	31	16	24	18	-6
15	24	32	8	18	40	22
16	28	32	4	17	23	6
17	23	39	16	9	16	7
18	11	21	10	13	22	9
19	21	24	3	23	37	14
20	23	40	17	13	14	1
21	27	40	13	20	23	3
22	23	27	4	15	16	1
Total Actual Differences			115			53
Actual Mean Differences			10.45			4.82
				t = 1.436		

TABLE 35

COMPARISON OF MATCHED PAIRS IN GROUP A
RAW SCORES OF VOCABULARY TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	40	40	0	32	30	-2
2	24	23	-1	34	36	2
3	18	26	8	24	34	10
4	23	32	9	40	42	2
5	28	25	-3	31	27	-4
6	25	27	2	21	24	3
7	18	29	11	23	27	4
8	19	17	-2	16	24	8
9	18	25	7	22	24	2
10	26	31	5	13	25	12
11	17	31	14	27	34	7
Total Actual Differences			50			44
Actual Mean Differences			4.54			4.00
			t = .238			

TABLE 36

COMPARISON OF MATCHED PAIRS IN GROUP B
RAW SCORES OF VOCABULARY TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12	16	20	4	11	20	9
13	23	28	5	19	29	10
14	30	31	1	29	35	6
15	23	25	2	26	32	6
16	21	20	-1	37	36	-1
17	20	23	3	16	21	5
18	12	10	-2	28	26	-2
19	18	34	16	19	22	3
20	23	23	. .	11	19	8
21	26	31	5	13	19	6
22	16	24	8	10	15	5
Total Actual Differences			41			55
Actual Mean Differences			3.73			5.00
				t = .6719		

TABLE 37

COMPARISON OF MATCHED PAIRS IN GROUP A
RAW SCORES OF SPELLING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	35	36	1	37	29	-8
2	13	17	4	41	40	-1
3	18	29	11	25	28	3
4	20	23	3	26	32	6
5*	. .	. .	. .	. .	. .	. .
6	34	37	3	26	32	6
7	18	20	2	21	25	4
8	15	20	5	14	23	9
9	23	26	3	13	20	7
10	25	35	10	15	28	13
11*	. .	. .	. .	. .	. .	. .
Total Actual Differences			53			39
Actual Mean Differences			5.3			3.9
			t = .630			

*One or both subjects were at the first grade level. Subjects at the first grade level did not take the spelling tests.

TABLE 38

COMPARISON OF MATCHED PAIRS IN GROUP B
RAW SCORES OF SPELLING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12*	. .	. .	. .	. .	. .	. .
13*	. .	. .	. .	. .	. .	. .
14*	. .	. .	. .	. .	. .	. .
15*	. .	. .	. .	. .	. .	. .
16	21	18	-3	39	40	1
17	20	27	7	16	25	9
18*	. .	. .	. .	. .	. .	. .
19	19	25	6	17	21	4
20	24	27	3	11	13	2
21*	. .	. .	. .	. .	. .	. .
22*	. .	. .	. .	. .	. .	. .
Total Actual Differences			13			16
Actual Mean Differences			3.25			4.00
			t = -.261			

*One or both subjects were at the first grade level. Subjects at the first grade level did not take the spelling test.

TABLE 39

COMPARISON OF MATCHED PAIRS IN GROUP A
GRADE EQUIVALENTS OF READING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	4.7	4.0	-.7	2.7	2.8	.1
2	3.6	3.6	. .	5.3	8.0	2.7
3	3.8	3.3	-.5	3.5	3.5	. .
4	2.6	3.5	.9	4.3	4.7	.4
5	4.2	4.4	.2	2.0	2.5	.5
6	3.6	3.3	-.3	3.5	3.5	. .
7	3.4	3.7	.3	3.4	3.4	. .
8	2.3	3.0	.7	3.0	3.4	.4
9	1.6	3.9	2.3	2.6	2.4	-.2
10	3.7	3.9	.2	2.7	3.5	.8
11	3.5	3.9	.4	2.5	2.9	.4
Total Differences			3.5			5.1
Mean Differences			.31			.46

TABLE 40

COMPARISON OF MATCHED PAIRS IN GROUP B
GRADE EQUIVALENTS OF READING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12	1.6	1.8	.2	1.8	2.1	.3
13	1.9	3.4	1.5	1.8	1.3	-.5
14	1.6	2.1	.5	3.9	3.2	-.7
15	1.9	2.2	.3	1.7	2.9	1.2
16	2.7	2.7	. .	3.2	3.6	.4
17	2.4	3.3	.9	2.3	3.0	.7
18	2.5	3.4	.9	1.5	1.8	.3
19	3.6	3.7	.1	2.4	3.2	.8
20	2.4	3.3	.9	3.7	4.0	.3
21	2.0	2.9	.9	2.2	2.2	. .
22	1.9	2.0	.1	3.0	3.0	. .
Total Differences			6.3			2.8
Mean Differences			.57			.25

TABLE 41

COMPARISON OF MATCHED PAIRS IN GROUP A
GRADE EQUIVALENTS OF VOCABULARY TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	5.4	5.7	.3	4.5	4.0	-.5
2	3.6	3.4	-.2	6.2	6.4	.2
3	3.1	3.7	.6	3.6	4.5	.9
4	2.8	3.7	2.1	5.4	6.1	.7
5	4.0	3.6	-.4	2.4	1.9	-.5
6	3.7	3.7		3.2	3.4	.2
7	3.1	3.8	.7	3.5	3.7	.2
8	2.5	2.2	-.3	2.2	2.8	.6
9	2.4	2.9	.5	2.7	2.8	.1
10	3.8	4.1	.3	2.0	2.9	.9
11	3.0	4.1	1.1	1.9	2.9	1.0
Total Differences			4.7			3.8
Mean Differences			.427			.34

TABLE 42

COMPARISON OF MATCHED PAIRS IN GROUP B
GRADE EQUIVALENTS OF VOCABULARY TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12	1.6	1.7	.1	1.9	2.5	.6
13	1.8	2.0	.2	1.7	2.1	.4
14	2.2	2.4	.2	4.1	4.7	.6
15	1.8	1.8	. .	1.9	2.5	.6
16	2.7	2.5	-.2	5.0	4.8	-.2
17	2.6	2.7	.1	2.9	3.1	.2
18	2.6	2.2	-.4	2.0	1.9	-.1
19	3.1	4.5	1.4	2.5	2.7	.2
20	2.8	2.7	-.1	3.4	4.3	.9
21	1.9	2.4	.5	2.0	2.3	.3
22	1.6	1.8	.2	2.4	2.7	.3
Total Differences			2.0			3.8
Mean Differences			.18			.34

TABLE 43

COMPARISON OF MATCHED PAIRS IN GROUP A
GRADE EQUIVALENTS OF SPELLING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
1	5.5	5.7	.2	6.2	4.8	-1.4
2	3.3	3.5	.2	7.1	7.3	.2
3	3.8	4.8	1.0	4.4	4.7	.3
4	2.9	3.4	.5	4.6	5.0	.4
5*	. .	. .	. .	. .	. .	. .
6	5.3	6.0	.7	4.6	5.0	.4
7	3.8	3.8	. .	4.0	4.2	.2
8	2.3	2.9	.6	2.3	3.4	1.1
9	3.4	4.0	.6	2.2	2.9	.7
10	4.4	5.5	1.1	2.3	4.4	2.1
11*	. .	. .	. .	. .	. .	. .
Total Differences			4.9			4.0
Mean Differences			.54			.44

*One or both subjects were at the first grade level. Subjects at the first grade level did not take the spelling tests.

TABLE 44

COMPARISON OF MATCHED PAIRS IN GROUP B
GRADE EQUIVALENTS OF SPELLING TESTS

Pair	Experimental Group			Control Group		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference
12*	. .	. .	. .	. .	. .	. .
13*	. .	. .	. .	. .	. .	. .
14*	. .	. .	. .	. .	. .	. .
15*	. .	. .	. .	. .	. .	. .
16	3.0	2.6	-.4	6.8	7.9	1.1
17	2.9	4.2	1.3	3.6	4.2	.6
18*	. .	. .	. .	. .	. .	. .
19	3.9	4.2	.3	2.5	3.0	.5
20	3.6	4.2	.6	3.3	3.6	.3
21*	. .	. .	. .	. .	. .	. .
22*	. .	. .	. .	. .	. .	. .
Total Differences			1.8			2.5
Mean Differences			.45			.6

*One or both subjects were at the first grade level. Subjects at the first grade level did not take the spelling tests.

TABLE 45

INDIVIDUAL RAW SCORES OF EXPERIMENTAL GROUP
FOR MOTOR SUBTESTS 1, 2, 3, 4, and 5

Subject	Number 1			Number 2			Number 3			Number 4			Number 5		
	Pre*	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	3	3	0	2	3	1	2	3	1	0	3	3	0	3	3
2	3	3	0	3	3	0	3	3	0	0	0	0	-	3	3
3	0	3	3	3	3	0	3	3	0	0	0	0	0	3	3
4	3	3	0	2	3	1	2	3	1	0	3	3	1	3	2
5	3	3	0	3	3	0	3	3	0	0	0	0	3	1	-2
6	3	1	-2	0	2	2	0	3	3	0	0	0	0	0	0
7	3	3	0	3	3	0	3	3	0	3	3	0	0	3	3
8	3	3	0	0	2	2	0	2	2	0	3	3	3	0	-3
9	3	3	0	3	3	0	2	3	1	3	3	0	3	3	0
10	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0
11	3	0	-3	2	3	1	3	3	0	0	3	3	3	3	C
12	3	3	0	3	3	0	2	2	0	0	3	3	3	3	0
13	3	3	0	2	3	1	2	3	1	3	3	0	3	3	0
14	0	3	3	3	3	0	3	3	0	0	0	0	2	3	1

TABLE 45--Continued

Subject	Number 1			Number 2			Number 3			Number 4			Number 5		
	Pre*	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	3	3	0	2	0	-2	2	2	0	3	3	0	3	3	0
16	3	0	-3	3	3	0	3	3	0	0	3	3	3	3	0
17	3	3	0	3	3	0	3	0	-3	1	3	2	0	3	3
18	3	3	0	2	3	1	3	2	-1	0	2	2	0	0	0
19	3	3	0	0	1	1	2	2	0	0	0	0	0	0	0
20	3	3	0	2	2	0	2	3	1	0	0	1	0	1	1
21	3	3	0	2	3	1	2	2	0	3	3	0	0	0	0
22	0	3	3	2	2	0	2	3	1	0	3	3	0	3	3
23	3	3	0	3	3	0	3	3	0	0	3	3	0	3	3
24	1	3	2	3	3	0	3	2	1	3	3	0	0	3	3
25	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0
26	3	3	0	3	2	-1	3	3	0	3	3	0	3	3	0
27	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0
28	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0

*Pretests and Posttests

TABLE 46

INDIVIDUAL RAW SCORES OF EXPERIMENTAL GROUP
FOR MOTOR SUBTESTS 6, 7, 8, 9, and 10

Subject	Number 6			Number 7			Number 8			Number 9			Number 10		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	3	3	0	1	1	0	1	2	1	1	1	0	2	1	-1
2	0	3	3	0	2	2	2	3	1	1	1	0	1	1	0
3	0	2	2	0	0	0	0	0	0	1	1	0	0	0	0
4	3	3	0	3	3	0	3	3	0	1	2	1	2	1	-1
5	0	3	3	0	0	0	0	1	1	1	1	0	0	0	0
6	0	0	0	0	0	0	0	1	1	1	1	0	1	0	-1
7	2	3	1	1	3	2	1	3	2	1	1	0	0	1	1
8	2	0	-2	3	2	-1	2	3	1	2	1	-1	0	0	0
9	0	3	3	3	2	-1	3	2	-1	1	1	0	0	0	0
10	3	3	0	1	2	1	2	2	0	1	0	-1	0	0	0
11	0	3	3	0	3	3	0	3	3	1	0	-1	1	2	1
12	0	0	0	0	3	3	0	1	1	0	0	0	2	1	-1
13	3	2	-1	0	2	2	0	3	3	1	1	0	1	1	0
14	2	3	1	1	3	2	1	3	2	0	0	0	1	0	-1

TABLE 46--Continued

Subject	Number 6			Number 7			Number 8			Number 9			Number 10		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	2	3	0	3	2	-1	3	1	-2	1	1	0	1	0	-1
16	0	2	2	0	0	0	0	0	0	1	0	-1	0	0	0
17	0	0	0	2	2	0	2	1	-1	1	1	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-1
19	2	0	-2	0	1	1	0	2	2	0	0	0	0	0	0
20	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
21	3	3	0	3	1	-2	3	3	0	0	0	0	2	0	-2
22	0	3	3	0	3	3	0	3	3	1	1	0	0	0	0
23	2	3	1	0	2	2	0	3	3	1	0	-1	1	1	0
24	3	3	0	2	3	1	2	3	1	0	1	1	0	1	1
25	3	3	0	0	1	1	0	0	0	1	1	0	1	0	-1
26	0	3	3	0	3	3	1	2	1	2	1	-1	0	0	0
27	3	3	0	1	2	1	1	3	2	1	0	-1	2	2	0
28	3	3	0	3	3	0	3	3	0	1	1	0	1	0	-1

TABLE 47

INDIVIDUAL RAW SCORES OF EXPERIMENTAL GROUP FOR MOTOR SUBTESTS 11, 12, 13, 14, AND COMPOSITE

Subject	Number 11			Number 12			Number 13			Number 14			Composite		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	0	1	1	0	1	1	0	0	0	1	1	0	16	26	10
2	3	3	0	1	1	0	1	1	0	1	2	1	19	29	10
3	3	1	-2	1	1	0	0	0	0	0	1	1	11	18	7
4	1	3	2	0	0	0	1	1	0	2	2	0	24	33	9
5	0	1	1	0	0	0	2	1	1	1	1	0	15	19	4
6	1	1	0	0	0	0	0	1	1	2	1	-1	8	12	4
7	0	1	1	0	0	0	0	0	0	1	1	0	18	28	10
8	0	1	1	0	1	1	1	2	1	0	2	2	16	22	6
9	3	2	-1	0	0	0	0	0	0	0	1	1	24	14	-10
10	0	3	3	0	0	0	0	1	1	1	2	1	23	28	5
11	0	0	0	3	3	0	0	2	2	1	2	1	17	30	13
12	0	0	0	0	0	0	0	2	2	2	2	0	15	23	8
13	0	0	0	2	1	-1	0	1	1	0	2	2	20	26	6
14	1	1	0	0	0	0	0	2	2	0	0	0	14	24	10

TABLE 47--Continued

Subject	Number 11			Number 12			Number 13			Number 14			Composite		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	0	0	0	3	3	0	1	0	-1	1	2	1	28	23	-5
16	0	0	0	0	0	0	1	0	-1	1	0	-1	15	14	-1
17	1	3	2	0	0	0	0	0	0	1	1	0	17	20	3
18	0	1	1	0	0	0	0	0	0	1	2	1	10	13	3
19	0	0	0	0	0	0	0	0	0	0	0	0	7	9	2
20	0	1	1	0	0	0	0	0	0	0	2	2	7	13	6
21	2	3	1	2	0	2	0	0	0	2	3	1	27	24	-3
22	1	3	2	0	0	0	1	2	1	1	2	1	8	31	23
23	3	0	-3	3	3	0	2	2	0	2	3	1	23	32	9
24	0	3	3	0	0	0	0	0	0	0	1	1	17	27	10
25	3	3	0	0	3	3	1	1	0	1	1	0	25	26	1
26	2	3	1	0	1	1	0	1	1	1	2	1	21	30	7
27	0	1	1	3	3	0	0	0	0	1	1	0	27	30	3
28	3	3	0	0	0	0	3	1	2	3	2	1	35	31	4

TABLE 48

INDIVIDUAL RAW SCORES OF CONTROL GROUP FOR MOTOR SUBTESTS 1, 2, 3, 4, AND 5

Subject	Number 1			Number 2			Number 3			Number 4			Number 5		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	3	3	0	3	3	0	3	3	0	0	0	0	2	3	1
2	3	3	0	3	2	-1	3	2	-1	0	3	3	0	3	3
3	3	3	0	3	3	0	3	3	0	3	0	-3	3	3	0
4	3	3	0	3	3	0	3	2	1	0	3	3	2	2	0
5	3	3	0	3	2	1	3	2	1	0	0	0	1	1	0
6	3	3	0	3	3	0	2	3	1	0	0	0	0	0	0
7	3	3	0	3	3	0	3	3	0	0	3	3	0	0	0
8	3	0	-3	3	2	-1	3	3	0	0	0	0	0	0	0
9	3	2	-1	3	2	-1	3	3	0	0	0	0	0	3	3
10	3	3	0	3	3	0	3	3	0	3	0	-3	3	3	0
11	3	3	0	3	3	0	2	3	1	0	0	0	0	2	2
12	3	3	0	3	3	0	3	3	0	0	3	3	3	3	0
13	3	3	0	0	3	3	3	3	0	0	3	3	1	3	2
14	3	3	0	0	2	2	0	3	3	0	3	3	2	2	0

TABLE 48--Continued

Subject	Number 1			Number 2			Number 3			Number 4			Number 5		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	3	3	0	3	2	-1	3	0	-3	0	3	3	0	0	0
16	3	3	0	3	2	-1	3	2	-1	0	0	0	0	3	3
17	3	3	0	3	2	-1	3	2	-1	3	0	-3	3	3	0
18	3	3	0	3	3	0	3	3	0	3	3	0	2	3	1
19	3	3	0	3	3	0	2	3	1	0	3	3	0	3	3
20	0	3	3	3	1	-2	3	0	-3	0	0	0	3	2	-1
21	3	2	-1	2	2	0	2	2	0	0	0	0	0	0	0
22	3	3	0	3	2	-1	3	3	0	0	3	3	3	3	0
23	1	3	2	3	3	0	3	3	0	0	1	1	2	3	1
24	1	3	2	3	3	0	3	2	-1	3	2	-1	2	3	1
25	3	3	0	3	2	-1	3	2	-1	3	3	0	3	0	-3
26	3	3	0	0	0	0	0	0	0	0	3	3	0	0	0
27	3	3	0	3	3	0	3	3	0	0	3	3	0	0	0
28	3	3	0	0	3	3	0	2	2	0	0	0	3	3	0

TABLE 49

INDIVIDUAL RAW SCORES OF CONTROL GROUP FOR MOTOR SUBTESTS 6, 7, 8, 9, AND 10

Subject	Number 6			Number 7			Number 8			Number 9			Number 10		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	0	2	2	0	0	0	0	0	0	1	0	-1	0	1	1
2	2	3	1	1	3	2	1	1	0	1	1	0	1	1	0
3	3	3	0	0	1	1	1	2	1	1	1	0	1	1	0
4	0	3	3	0	1	1	1	1	0	1	1	0	0	0	0
5	3	0	-3	2	1	-1	1	1	0	0	1	1	0	0	0
6	2	3	1	0	0	0	0	2	2	2	2	0	0	2	2
7	0	0	0	1	0	-1	0	1	1	0	1	1	0	0	0
8	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
9	3	0	-3	1	0	-1	1	0	-1	1	1	0	1	0	-1
10	3	3	0	0	0	0	0	1	1	1	1	0	1	2	1
11	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0
12	2	0	0	0	0	0	0	2	2	1	1	0	1	1	0
13	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
14	2	2	0	0	0	0	1	1	0	0	0	0	0	0	0

TABLE 49--Continued

Subject	Number 6			Number 7			Number 8			Number 9			Number 10		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	0	3	3	1	3	2	3	3	-3	1	1	0	0	0	0
16	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
17	3	0	-3	3	2	-1	1	2	1	1	2	1	0	1	1
18	0	3	3	2	3	1	3	3	0	1	1	0	0	0	0
19	0	0	0	3	3	0	3	2	-1	1	0	-1	1	0	-1
20	0	2	2	0	0	0	0	0	0	2	0	-2	0	0	0
21	0	0	0	0	2	2	1	2	1	0	0	0	1	0	-1
22	3	3	0	1	2	1	0	3	3	1	1	0	1	0	-1
23	2	3	1	0	2	2	0	3	3	1	1	0	0	1	1
24	0	2	2	0	3	3	0	3	3	0	2	2	0	0	0
25	0	3	3	1	1	0	0	2	2	0	1	1	0	0	0
26	2	0	-2	0	1	1	0	1	1	1	0	-1	0	0	0
27	0	2	2	0	1	1	0	2	2	1	1	0	1	0	-1
28	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-1

TABLE 50

INDIVIDUAL RAW SCORES OF CONTROL GROUP FOR MOTOR SUBTESTS 11, 12, 13, 14, AND COMPOSITE

Subject	Number 11			Number 12			Number 13			Number 14			Composite		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	0	0	0	0	3	3	0	1	1	1	1	0	12	20	7
2	0	0	0	0	0	0	0	0	0	2	1	-1	17	20	3
3	2	3	1	0	0	0	0	0	0	2	1	-1	21	27	6
4	0	0	0	0	0	0	0	0	0	0	0	0	13	19	6
5	0	0	0	0	1	1	0	0	0	0	0	0	14	12	-2
6	0	0	0	0	0	0	2	2	0	1	0	-1	15	20	5
7	0	1	1	0	0	0	2	1	-1	0	1	1	12	17	5
8	0	0	0	0	0	0	0	1	1	0	2	2	10	9	-1
9	2	1	-1	0	0	0	1	1	0	2	1	-1	21	14	-7
10	0	1	1	1	2	1	2	0	-2	1	2	-1	24	24	0
11	1	0	-1	0	0	0	0	1	-1	0	0	0	9	14	5
12	1	0	-1	0	0	0	1	1	0	2	1	-1	20	22	2
13	0	1	-1	0	0	0	0	0	0	0	0	0	11	14	3
14	0	1	1	0	3	3	0	0	0	0	2	2	8	22	14

TABLE 50--Continued

Subject	Number 11			Number 12			Number 13			Number 14			Composite		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
15	0	0	0	1	0	-1	0	0	0	0	0	0	15	15	0
16	3	1	-2	0	1	1	1	0	-1	0	0	0	16	15	-1
17	3	3	0	0	0	0	3	1	-2	2	2	0	31	23	-8
18	0	1	-1	0	0	0	0	0	0	1	1	0	21	27	6
19	0	0	0	0	1	1	0	0	0	1	2	1	17	23	6
20	2	3	1	0	0	0	3	3	0	1	0	-1	17	14	-3
21	2	3	1	0	0	0	1	1	0	2	2	0	14	16	2
22	1	2	1	1	1	0	0	1	1	0	3	3	20	30	10
23	0	3	3	0	0	0	0	0	0	0	0	0	12	24	12
24	1	3	2	0	0	0	1	1	0	1	1	0	16	28	12
25	0	1	1	0	0	0	2	2	0	0	0	0	18	20	2
26	0	0	0	0	0	0	0	0	0	0	0	0	6	8	2
27	0	3	3	0	0	0	1	1	0	0	1	-1	13	22	9
28	0	1	1	2	2	0	0	0	0	1	2	1	10	16	6

APPENDIX Q

SELECTED CASE STUDIES

Case Study Number 1; Boy; CA, 11.3; MA, 7.10; IQ, 62; Grade Level, 1.6.

This was a very delicate-appearing boy who lacked physical vitality and was grossly deficient in motor coordination. The youngest of five children, he was over-protected by his parents and older siblings. He contracted measles at the age of nine months, and after that seemed to become retarded both physically and mentally.

He began school with very immature speech and language patterns. His parents were very serious, severe, and extremely exacting. One of his older sisters, who was studying nursing, was instrumental in helping the parents to admit and accept this boy's condition. For the past year, the family seemed to have relaxed and endeavored to help him in a more positive manner.

The boy had been in school for five years. He had cooperated well, but his functioning was hampered by difficulty in verbalization and by emotional factors. There was a history of daily vomiting because of fear of not being able to perform as expected. This had recently ceased.

Extremely immature and dependent, there was a great amount of anxiety present in this child. A resistance to school attendance resulted, and frequent absences occurred. It was significant that since the typewriting program began, he missed only one day of school.

His teacher noted that this year had seen many good things happen to the boy. He was reading well at the first grade level. Since the reading vocabulary had been mastered through the typewriting repetitive exercises, his reading had improved greatly in fluency. His vocabulary had expanded, his speech improved, and his memory span lengthened. His spelling had improved dramatically. This resulted, his teacher believed, from the typewriting program which called attention to letter sequences. Arithmetic was his poorest subject, for which he appeared to have a mental block.

Since participating in the typewriting study, this boy had acquired a great deal of needed independence and self-esteem. He worked slowly, but deliberately, diligently, and steadily. He still appeared tense while doing his assignments, but thoroughly enjoyed the typewriting sessions and frequently asked to prolong the time. He kept his lessons in perfect order and was very proud of his work. At first, he experienced difficulty in maintaining straight lines on the typewriter, but learned to master the technique of alignment.

Case Study Number 2; Boy; CA, 14.6; MA, 12.1; IQ, 84; Grade Level, 4.9.

This boy was referred for mental evaluation and subsequently placed in the special education class as a result of repeated failures in his academic work. His parents were divorced when he was six weeks old. His father died shortly after that time. Since then, he had been the only male in the family of four children. He evidenced greatly the lack of male relationships. He completely "tuned out" his mother and sisters who tended to constantly nag him. He had no obvious sensory or motor impairments.

This boy was emotionally immature, insecure, and impulsive. He lacked stability. He was anxious to be accepted and related on a very immature level. His speech was careless and sometimes bordered on stuttering.

He had been in the special class for six years. His listening skills were poor. He did not think problems through carefully, but tended to give impulsive guesses as answers. School work fluctuated.

Typewriting had been especially advantageous for this boy. In it he found a sense of accomplishment not previously experienced. He never failed to complete his daily lessons and delighted in doing other assignments on the typewriter. His teacher felt that this boy had profited from typewriting in terms of self-discipline and mastery of vocabulary.

Case Study Number 3; Boy; CA, 12.10; MA, 10.0; IQ, 78; Grade Level, 3.5.

The oldest of four children, this boy was somewhat over-protected, but not over-indulged. There were no test evidences of organic pathology.

He did poor school work. Prior to his placement in the special education class, he had repeated two grades. In addition to being mentally handicapped, this boy was culturally deprived. When he failed to learn to read, all of his academic work suffered. His verbal skills and ability for abstraction were weak.

This boy was quiet, retiring, and rather shy, but pleasant. He related well to others, was immature, docile, and very obedient. Little self-confidence was displayed by him.

He enrolled in the class with very weak phonetic skills and poor comprehension. He was insecure in any learning situation.

The typewriting program proved to be invaluable for this boy. He gained self-confidence and a sense of achievement. The vast amount of drill on vocabulary helped him to approach reading with delight. For the first time in his school career, he completed a reader and felt that he had done so with real success. An understanding of the reading vocabulary enabled the boy to concentrate on the content of the stories; hence, there was a significant increase in reading comprehension. His whole attitude changed toward reading, and he was now enjoying this skill.

During the entire typewriting program, the boy never showed signs of diminishing interest. He obviously enjoyed the drills which were, in the estimation of his teacher, far superior to any other form of drill to which he had been exposed. Needing drill intensely and receiving it in this interesting manner, was a boon to him. He continued to type daily, even after the experiment was completed. This was an indication of his realization that typewriting enhanced his self-esteem and was an aid to learning.

Case Study Number 4; Boy; CA, 14.0; MA, 7.7; IQ, 56; Grade Level, 1.6.

This boy was the youngest of four children, and the only boy in the family. He had an older sister who was mentally ill, and who lived at home part of the time. His father was a hard-working, rather quiet man, employed by a gas company. His mother was a housewife, who was very high strung and had frequent emotional outbursts. She had a pugnacious temper and unpredictable moods. Her tendency was to be over-protective of the boy.

It was not until this boy was six years old that his parents recognized, or would admit, that he was mentally retarded. Even then, his father had great difficulty in accepting this fact. The boy was diagnosed as having been brain damaged from birth.

Because his parents did not consider this boy retarded, they sent him to a regular kindergarten, and there he spoke his first sentence. He was recommended for testing by his teacher, who thought that he may be a slow learner. The tests revealed that he was mentally retarded, and the recommendation was made that he be placed in a special education class.

This boy was hyperactive and found concentration difficult. He lacked self-confidence and had a negative attitude about himself and the world around him. He had met failure often, even at play. By his constant and repetitive questions, he annoyed other children. He did not put forth the effort to succeed in sports. Often, he was tantalized by other children, but did not fight back. He resorted to name-calling. He had no real friends. This boy was tall, nice-looking, well-built, and always neat and clean.

Due to the success he achieved in typewriting, this boy liked to type. He frequently told others of his achievement, whereas formerly he told only of the things he could not do. His attitude toward school had been very negative. He had been performing in arithmetic, reading, and printing at the first grade level. He did not seem able to grasp the formations for cursive writing. However, since experiencing success in typewriting, his attitude toward school improved greatly. He exhibited confidence in himself in the following ways: walking to school alone, attempting to cut his own meat, knocking on the reading teacher's door every morning to greet her (previously he would not go next door with a written message), and adjusting the venetian blinds for the group.

Case Study Number 5; Boy; CA, 11.0; MA, 8.2; IQ, 74; Grade Level, 1.7.

This boy was from a well-adjusted home. His father was a salesman; his mother, a housewife. They seemed to have accepted his mental retardation better after observing his success in typewriting. The boy was cooperative and got along well with people. He was anxious to please others.

His greatest difficulty was poor auditory and visual perception; he seemed unable to synthesize letter sounds and visual symbols. Through the repetition of the typewriting exercises, he improved significantly in

written and oral language. He had achieved higher speeds in typewriting than his associates in the typewriting project. Before typewriting, he had been unable to compose sentences. Through the use of the typewriter, he achieved this ability. He used every available minute for typing his study words and captions at the tops of his drawings. He took pride in labeling every object with the typewriter.

Case Study Number 6; Girl; CA, 12.6; MA, 8.4; IQ, 66; Grade Level, 2.4.

This child's father was a florist; her mother, a housewife. She was the oldest of three children. Theirs was a happy home life. The girl's mother reported that after a convulsion at the age of two and one-half years, she stopped talking. She had been taking medication to prevent another attack, and had not had one for nine years. The doctor observed no indication of brain damage.

This child reacted in an immature manner. However, she gained self-confidence since typewriting and was pleased with her success.

As a result of tyepwriting her attention level increased. Her responses showed evidence of success. Reading, spelling, and writing had noticeably improved. She was given the additional opportunity to type when finished with her regular school work, and used every available minute for this activity. She labeled all her pictures by typing the names of the objects by them. She also typed labels for other children's pictures, thus becoming a subject of their admiration. One of her classmates, a little Mongoloid girl, was frequently seen standing at her side to watch her type.

Case Study Number 7; Girl; CA, 11.9; MA, 7.3; IQ, 58; Grade Level, 1.8.

This girl was the youngest of five children. Her father was an insurance salesman and her mother a typist. There was an extremely interdependent relationship between her mother and this girl.

Aware of her intellectual inadequacy, this girl was hesitant to speak for fear of not being understood. Failure had been her frequent experience. She had no social life apart from her mother. Her father called for her each afternoon when school was dismissed. If he was a few minutes late, she became frightened. She was a well-mannered girl, willing to cooperate actively in a one-to-one situation, after she established trust in the other person.

Typewriting had instilled much confidence in this girl. She became more sociable with other children, making friends for the first time. The interdependent relationship which existed between this girl and her mother had been detrimental to her development of an adequate self-concept and independent skills. The skill of typewriting provided a diversion from her mother and gave her great satisfaction. The girl's mother, being a typist, was astonished and pleased with her accomplishment, and purchased an electric typewriter for her.

Case Study Number 8; Boy; CA, 15.1; MA, 11.0; IQ, 83; Grade Level, 3.5.

This boy was one of three children. He was generous and cooperative, but had an aggressive form of behavior. Hence, he did not relate easily to others. He was willful, insecure, and often frustrated.

He greatly needed to feel success, particularly in academic areas. The experience of typewriting provided him with greater security in reading, spelling, and motor control. His attitude toward other studies likewise improved as a result of his achievement in typewriting.

Case Study Number 9; Boy; CA, 13.7; MA, 9.9; IQ, 72, Grade Level, 3.6.

The youngest of three children in a happy family, this boy was over-protected and shielded from responsibility. His emotional immaturity led to poor work habits and lack of attention.

The typewriting experience gave him the feeling of achievement and satisfaction. This boy was the first in his class to ask to type a letter to his brother who was in the service. "He wants to tell the world about his typing," related his teacher. His academic work improved significantly.

Case Study Number 10; Girl; CA, 14.2; MA, 9.11; IQ, 70; Grade Level, 3.7.

This girl was the youngest of six children, whose father was employed in a supervisory capacity. Her mother and one of her brothers had very limited intellectual ability. She had been referred to the special education class after failing every subject in the sixth grade. She had already repeated the second grade.

She had limited ability for abstraction, and lacked confidence in a learning situation. She was insecure, even under mild pressure. Well-adjusted socially, she was a friendly, cooperative child.

Recently, her teacher reported that she seemed to have "new life" as far as school work was concerned. This was attributed to her success at typewriting. In her case record, the recommendation was made that she be given an opportunity for vocational training. Typewriting at the straight-copy rate of approximately twenty-one words per minute with good accuracy provided prevocational training for her. Her interest was high in most of her endeavors, but typewriting held first place.

Case Study Number 11; Boy; CA, 11.4; MA, 7.7; IQ, 67; Grade Level, 3.6.

The youngest of five children, this boy lived in a home upset by domestic problems. His parents were separated; his mother was employed and away from home much of the time. He spent much of his free time with his father, who catered to him, greatly to the distress of his mother.

This child repeated a primary grade before being referred to the special education class. His attention and concentration skills were poorly developed, his memory was weak, and his word attack skills deficient.

There was a decided change in his attitude toward school as a result of typewriting. His interest rate mounted. Both parents reported that they were happy with this venture.

Case Study Number 12; Boy; CA, 13.11; MA, 10.10; IQ, 78; Grade Level, 4.7.

This boy was the third of four children whose father was a baker. His mother found it difficult to accept his retardation.

He seemed to be apathetic and poorly motivated. He groped for answers and responded only after much prodding. He was shy and displayed feelings of inferiority.

The typewriting experience strengthened greatly his feeling of success and security. He saw things to be done and took care of them. He was very proud to display his typewriting papers. Now, apparently he wants to forge ahead.

Case Study Number 13; Girl; CA, 12.0; MA, 9.0; IQ, 75; Grade Level, 2.6.

This girl was a twin whose twin brother was not in the special education class. Both parents had two jobs and often left their nine children alone. This girl and her brother were the second youngest and had been brought up by older brothers and sisters.

She was deficient in word attack skills, reading comprehension, and vocabulary. Competition with her brother and a negative self-concept caused a feeling of inferiority.

Her teacher noted that since typewriting, her written work had a neater appearance, apparently due to pride in neat typewriting papers. Since she was able to do something that other children, including her brother, cannot, her sense of personal worth was greatly increased.

Case Study Number 14; Girl; CA, 11.6; MA, 7.8; IQ, 67; Grade Level, 2.4.

The fourth oldest of ten children, this girl had a brother who was severely retarded. Her father, a lawyer, was unfaithful to his family and eventually separated from it. Her grandmother then took care of the children, while her mother worked as a nurse at a local hospital.

After attending two regular public nursery schools and kindergarten, this child was enrolled in the special education class three years ago. Although she was immature and dependent, she began to improve when given responsibilities. She was cooperative and very anxious to meet the

demands of the day.

Learning to type was very stimulating for this girl. Formerly, she wrote the letters of the alphabet incorrectly due to poor hand and eye coordination. Within recent weeks, her writing improved greatly. Seldom did she leave unclosed letters or make reversals after learning to type. Although previously she was unaware of her errors, she now recognized them immediately and was eager to correct them. She also experienced success in sentence structure formation and in spelling. Her mother recently purchased a typewriter for her.

Case Study Number 15; Girl; CA, 13.11; MA, 10.10; IQ, 78; Grade Level, 3.8.

This girl was one of ten children in a secure, happy family. She scored in the low, slow-learning to borderline category on tests. Her reactions were slow, and she had difficulty with abstractions. Somewhat withdrawn and reticent, she related on an immature level. She had little self-confidence, was apprehensive in a learning situation, and tended to give up very easily, demonstrating signs of insecurity.

She seemed to enjoy typewriting and showed radical improvement in the following areas: a positive attitude toward school, greater self-confidence, increased sociability.

Case Study Number 16; Girl; CA, 15.1; MA, 12.5; IQ, 83; Grade Level, 5.7.

This girl was an only child whose mother was extremely emotional, and over-protective of her. For example, when the girl began special education class at the age of six years, she had not been allowed to climb stairs. She had always been carried. She had not been allowed to eat solid foods until that time. During the first six weeks of school, her mother would not leave the school building until ordered to do so by school authorities. Her presence caused the child to become so emotionally disturbed that she would vomit, become hyperactive, and very anxious.

As a form of escape, the child would project herself into a world of make-believe. She would talk to imaginary animals all day long. She had overcome much of this recently, but still escaped to an imaginary world when challenged, or insecure in a situation.

Her mother continued to refuse to allow the girl to have friends her own age, or to participate in field trips, parties, and other activities provided by the school.

Typewriting had been a wonderful experience for this child, observed her teacher. It enabled her to express herself in interesting ways.

Case Study Number 17; Girl; CA, 13.7; MA, 10.1; IQ, 85; Grade Level, 4.4.

When the typewriting program began, this girl was lonely, anxious,

impulsive, willful, immature, and easily distracted. There appeared to be nervous tension which reflected her mother's anxious personality.

This child profited greatly from typewriting. She found that she could accomplish something worthwhile. When the study began, she would become sullen when mistakes were indicated on her papers. Later, however, she brought her papers to her teacher to find out if she was improving. She expressed great sorrow when the study ended, stating that she wished she could continue to type.

Case Study Number 18; Boy; CA, 14.5; MA, 11.3; IQ, 78; Grade Level, 3.6.

This boy was adopted into a happy family and was the oldest of two children. The family was bi-lingual, which contributed to difficulty in his verbal comprehension. Functioning on a level of borderline to slow-learning, his work habits and listening skills were weak.

An immature, happy boy, this child related easily to others. He was depressed by mild brain damage.

He showed signs of hyperactivity, which resulted in fluctuating performance in typewriting. His teacher indicated, however, that generally speaking, typewriting had helped to improve his reading and spelling. This was attributed to the repetition of words, phrases, and sentences in the typewriting materials.

APPENDIX R

UNEDITED SAMPLES OF PUPILS' LETTERS

Epiphany School
St. Louis Mo.
Feb. 3, 1970

Dear Sister

How was your trip back to North Dakota Satuarday night?
Did you enjoy seeing us?
I am glad that you like our work . I hope you can spend
more tine whith us next time. How is North Dakota today?
It was cold here Febuary 3, 1970 it was about 3 above
zero that day. We thought that it was real neat that
you told Sister that we could take our papers homewith
us. I hope you come back soonto see us.

Your friend

Jeffrey Grommet

Epiphany School

Apr. 14, 1970

Dear Sister Paulette,

How are you doing. I am doing fine. We just fished test. I think I did butter than I did last time. My mother likes this typeing program very much. And my sister Pat likes it too. I like it very much to because itis interesting and you learn how to type and,When you know how to type you type real fast. I think you know brother,he the one who is in the Air Force, and He workes on the airplane and he get up at 5:00 in the moning and he like it very much. At when it is 8:00 the rest of the day is his.And I want to know when you are comming to see us again, I hope you do.

Your Friend

John DiLorenzo

Epiphany School
St, Louis Mo.
Feb..3,1970

Dear Sister,

We were glad to see you and the Genllemen. My mother thinks this program is wonderful. My mother said she would like to meet you and the Genllemen. My typing paper is going to be sent oversees to my brother. My brother told my to keep up the good work. We would like you and the Genllemen to come again. We are going to get a typewrite.

Sincerely Yours,

Clara Quinn

APPENDIX S

UNEDITED EXCERPTS FROM PARENTS' LETTERS

1. I think this program is a world of good for the children. Craig now asks about the words on the TV casts which he didn't pay any attention to before, and also about things in the paper, for example We were talking about the plane that flew thru the Arch, he wanted to see the printing about the story and wanted to know why he did it He also looks at the comics now.

2. I think it help Vickie.

3. I think any project my child is involved in is very important to her in her schooling. As far as reading is concerned my child has always liked to read book's though she is not very good at it. but there has been a very big improvement in her reading. and in all her school work in general in the past month or two. reading and drawing picture's are the things she like's to do most. and if the typing project is helping the children as it seem's to be doing then I think it is very important and should be continued.

4. I have notice an improvement in Jack's reading since he's been typing, and he seems more interested in reading also, he now get's bocks out to read without me asking him to. Thank you very much for this new project. I like it.

5. Jean has improved. There are times when Jean will pick up book's. But I have a Library book here. She don't seem to want to read it. Jean need a better working habit.

6. Mr. Freund and I have noticed a remarkable change in Linda this Term. She seems very interested in spelling & meaning of words. She askes many times the exact meaning of a word. She also acts so much more mature in so many ways.

7. I think Kent is improving in his work. he did his homework last nite. I help him with the first one. Then he did the rest by his self.

8. There is a big improvement in all her work mostly in <u>spelling</u>.

9. Yes I think the typing has helped because she comes home spelling words that she types and tells me what they are.

10. I have seen improvement in Gayle. He shows far more interest in studying than before. He goes regularly to the library. He wants to improve. Even though the progress is not the greatest, I'm pleased. Thank you.

11. Frankly, the only improvement that I have seen in Karla is that she has taken and interest in the daily paper. Now I still feel Karla could do better but she simply doesn't apply her self. Thank you.

12. I am very glad Clara has been typing as she enjoys every minute. I like the typing as she is doing very much better in her lessons. Her reading and other work has improved.

13. We want to tell you how happy we are about the typing program at Epiphany. John is so interested and enjoys it so much. Why he even seems to be doing better in his school work.

Its a marvelous program and we're so happy Epiphany and Sr. Madeleine are a part of it. So our thanks to you for thinking how much typing can help these children in Special Education. Its great to be able to be a part of your program.

14. I am happy there is a typing program at Epiphany Special School, and Jeffrey was chosen to participate. I am positive it will help Jeffrey's coordination.

15. Johnny tells me you would like to have me give you a few comments regarding the typing instructions he is receiving at school.

As far as I can tell I see that Johnny is quite enthused about the typing class because each nite he comes to me & tells me about the progress he seems to be making with his "typing."

Fortunately I have an old typewriter at home & I permit him to use it. He has taken a strong interest in learning to type & appears to enjoy it quite a lot.

16. I was very impressed when I heard that some of the children were being taught typing. I am thrilled that Mary Brigid is one of the children learning to type. I feel that this will be very helpful to her not only in motor coordination but also improving her attention span. This can also help build up her confidence.

Mary Brigid is very interested in typing and talks about it at home a great deal. Thank you so much for all your help.

17. We are so thrilled and pleased with the way Helen is learning to type. It has made her concentrate and stay on one subject for awhile. Since typing she reads much better. Before she was always adding or leaving out words. Her vocabulary has also improved and she is making complete sentences. My hopes and prayers are for this program to continue.

18. Jeanne seems to be the focal point of family interest at our house and being chosen by Sister Catherine Louise to participate in the typing program made us very pleased. We feel it is helping her in many ways.

First of all, she is extremely proud that she is learning to type and when we tell her everyone in the family types now she realizes typing is something a little special and makes her feel important. It helps her concentration and coordination.

Jeanne is a very shy and uncertain person and learning anything that she knows she's accomplishing helps her feel more secure - in this sense typing helps because it's something she can do <u>all</u> by herself.

I think it encourages her to read more because she has been trying to read newspapers and magazines and never seemed interested before.

She expresses a definite interest in typing which I feel is important to children who are retarded - I believe the satisfaction they have when they know they're doing a job well is very important to them.

19. I am in favor of the typing program. I believe it will help him in his reading and spelling. He enjoys typing and it also give him a feeling of importance, witch gives him self assurance.

20. I think the typing program is doing a fine job. It help the children to read better I think they should keep this typing up for the sake of the children.

21. I have found that Michael looks at the newspaper now, more than he ever did. Typing seems to interest him. He still is a slow reader and a lazy one.

22. I haven't noticed any change in Christy's work.

23. My husband and myself think the project is very good, I do think it could have been started sooner.

There has been some change of interest in his reading & from no interest to interest is a big change. Keep up the good work.

24. I feel that this program has stimulated Joe's interest in reading. His library books are quite diversive as "Cabin Making," and stock car racing engines.

At times he reads only portions of the book he tells me about them and seems quite accurate with the information. He doesn't seem to dislike school as much.

I personally feel that this is indeed a "break thru" for the class indicated.

25. Yes, I have seen that Cecilia does read more at home. To her two little sisters.

APPENDIX T

SUMMARY OF TEACHERS' EVALUATIONS

WHAT CHANGES HAVE OCCURRED IN THE EXPERIMENTAL GROUP AS A RESULT OF THE TYPEWRITING PROGRAM?

1. More interest in reading; more interest in spelling.

2. In general there hasn't been a noticeable change. I have, however, observed sustained interest in reading the typing papers. There has been no objection to working at the typing, which implies to me that the typewriter is highly motivational.

3. More interest in job qualifications, possible summer opportunities, "free-time" typing jobs available, etc.

Rosalyn has been more careful in her written work, apparently because of pride taken in neat typing papers.

4. Since I have pupils at three different grade levels, it is difficult to make general statements. The children in the two upper levels have assumed an air of independence since participating in the study. After the initial explanation and direction, there has been no need for further motivation. They follow the routine as a matter of course each day.

After each day's exercises are completed, they are working at self-devised additional activities at the typewriter. The lowest level is slower to finish their assignments and lack the ability to initiate or complete supplementary exercises.

5. The children are still anxious to do their work in typing. They are not as happy in doing supplementary typewriting exercises. Even with a picture about which to type a story before them, there is always difficulty with words and sentences.

6. The class shows a great pride in what some of its members can do. The children have become very careful of details, such as capital letters and punctuation marks.

7. Students have attained a significantly higher task attention level, especially in the language arts activities. The programmed typewriting materials contributed to greater success, because the children's attention was always directed to what was being typed. Their interest never waned. I have had the joy of seeing the pupils take their reader from the bookshelf and type the words that were stumbling blocks in reading and spelling.

A common goal has contributed to uniting the group. They type each other's phone numbers and call one another on the telephone when they go home. They show admiration and approval of one another's efficiency in typing and other language activities.

The children were eager to complete assigned tasks each day.

The typewriting program has created an environment which has

been most conducive to learning. The pupils who are not in the program are anxious to develop their language skills as well.

WHAT CHANGES HAVE OCCURRED IN THE CONTROL GROUP AS A RESULT OF THE TYPEWRITING PROGRAM?

1. One of the children is extremely interested in the total project and is very anxious to achieve. The other five, however, ask freqently when they can do their work on the typewriter. There does not appear to be a significant change in the control group.

2. In the control group, I find a steady drive to produce good work; their interest level has remained high. However, at the fifth grade level, I find a slight deterioration in the handwriting. This may be attributed to the fact that handwriting is slower and the pupils try to finish as quickly as their typewriting partners. This has produced some carelessness in their work. Because it takes longer to write, the control group is not able to write creatively as much as they wish in the 45-minute period.

3. There does not seem to be a change in the control group. They are getting tired of writing and careless with their work.

4. There appears to be a mild form of hostility in the control group among those who resent not being able to type.

WHAT CHANGES HAVE OCCURRED IN THE GROUP WHICH DID NOT PARTICIPATE IN EITHER THE EXPERIMENTAL OR CONTROL GROUP IN YOUR CLASS AS A RESULT OF THE TYPEWRITING PROGRAM?

1. No changes have been evident to me; however, the desire is often expressed that they be able to type next year.

2. They are very proud of the accomplishments of those taking part in the typewriting program.

3. There seems to be an increased awareness of the vocational aspect of typewriting.

WHAT WAS YOUR ATTITUDE TOWARD THE PROGRAM BEFORE IT BEGAN?

WHAT IS YOUR ATTITUDE TOWARD THE PROGRAM AT THE PRESENT TIME?

1. Before.--In the beginning I was very interested in the program. Truly, I wondered just how it would work. Of course, there have been changes in the schedule of the day in order to get the work accomplished. Once we got into the swing of things, there was no trouble.

After.--Now, I am interested in knowing the outcome of the program. Of course, I hope it will be favorable.

2. Before.--I began the program with a very positive attitude.

After.--I have maintained my positive attitude toward the program,

and have only praise for its effects. It teaches many disciplines as side effects. The children's attention span has been lengthened, they direct their attention to details more readily, and they tend to complete assignments without pressure.

Typing provides the structure the brain-injured child needs.

I would like to be able to continue the program, because I feel that the typing exercises have contributed to the children's growth in many ways. I would like to use the typewriters and materials for the entire group because it has definitely taken some of the "labor" out of teaching reading. Typing is a painless and interesting way to reinforce vocabulary.

3. Before.--I was very happy to participate in the program and was convinced of its educational value.

After.--I am still convinced that the children persevere at a task much longer and that this in itself is bound to bear fruit. It is highly motivational, and psychologically it gives status to a retarded child that is valid and recognized by society as an accomplishment. As a tool of learning, the typewriter does have advantages. This is just an opinion and probably colored by my prejudice. I am very anxious to see hard data concerning the total project.

4. Before.--My attitude toward the project was one of great anticipation, as I was anxious to see how it would succeed.

After.--I believe it has helped these children. They seem to be relaxed, satisfied, and have experienced the satisfaction of having accomplished something worthwhile.

5. Before.--I was very excited about being able to take part in it.

After.--I am very sorry to see it come to an end. It has been an honor to have been chosen to work with this study.

6. Before.--I was delighted when I was asked to participate in this study. I have always been interested in teaching typewriting to the retarded. In 1959, I familiarized myself with the Keyboard Town Story, by Anna Mae Gallagher. We had only one typewriter, and I was on my own as far as the study was concerned. Neither the students nor I were sufficiently motivated to pursue this program.

This was an excellent opportunity to carry out what I believe will help to meet the needs of the retarded in language arts.

After.--My attitude now is one of real satisfaction. The typewriter is a necessary tool for the retarded. Not only has it enchanced the academic achievement of the children, but psychologically it has provided them with some prestige. I am happy to have experienced the rewarding results of the positive reinforcements of my students during this typewriting program.

APPENDIX U

UNEDITED SAMPLES OF STUDENTS' SUPPLEMENTARY WORK

Cheryl Jadrich February 9, 1970

St. Pius School School

English

Snow

I like now because it is beautiful to me and my dog likes it. It is white and it is good to make snowballs. Snow comes from the sky and it is different all the time. I like snow in different ways. I never seen snow in the springtime. But that is another story.

Clara Quinn Feb.18,1970

My mother is a very nice lady. Mother's can help there children. My mother helps me a lot. My mother works in our house. My mother has been a grandmother for nine years. My mother is going to buy a typewriter. My mother said she is going to type letters to my brother. Everyone should love there mother.

Jeffrey Grommet Feb. 4, 1970

Meat comes from all kinds of animals they come from cows, pigs, terkeys, and all kinds of other animals. We go and butcher them before we can eat them. Where can meats be served? They can be served in homes, restraunts, cafes, and other little places that served meals. The restraunts only use grade A meat. The stores olny use grade A meats from the best cows, pigs, chickens.

Mike Westermayer

St Anthony
3/3/70

My Pet

My dog knows many tricks.

She is a smart dog. We call her

April. I take her for a walk

every day.

BIBLIOGRAPHY

BIBLIOGRAPHY

Alley, Gordon R., and Carr, Donald L. "Effects of Systematic Sensory-Motor, Visual Perception and Concept Formation Performance of Mentally Retarded Children." Perceptual and Motor Skills, XXVII (October, 1968), 451-66.

Ammons, R. B.; Farr, R. G.; Bloch, Edith; Neumann, Eva; Dey, Mukul; Marion, Ralph; and Ammons, C. H. "Long-Term Retention of Perceptual Motor Skills." Journal of Experimental Psychology, LV (April, 1958), 318-28.

Applegate, Dorothy. "Job Opportunities for the Educable Retarded." Education, LXXXVIII (April-May, 1968), 368-69.

_____. "Ten-Point Reading Program for Educables." Instructor, LXXIX (October, 1969), 140-41.

Artuso, Alfred Anthony. "Motivation of the Language Arts Program in Grades Four, Five, and Six Through Instruction in Typing." Unpublished Ed.D. Dissertation, University of Southern California, Los Angeles, 1961.

Auxter, D. "Muscular Fatigue in Mentally Retarded Children." Training School Bulletin, LXIII (May, 1966), 5-10.

Babington, W. K. "Mental Retardation Programs of the Department of Health, Education, and Welfare." Exceptional Children, XXXI (November, 1964), 105-11.

Bailer, Irving. "Conceptualization of Success and Failure in Mentally Retarded and Normal Children." Unpublished Ph.D. dissertation, George Peabody College for Teachers, Nashville, Tennessee, 1960.

Baker, Harry J. Characteristic Differences in Bright and Dull Pupils. Bloomington, Illinois: Public School Publishing Co., 1927.

_____. Introduction to Exceptional Children. New York: The Macmillan Co., 1953.

Balthaser, Robert D. "An Experiment in Teaching Typewriting by the Touch Method to Fourth and Fifth Grade Students." Unpublished Master's thesis, Ohio State University, 1952.

Bane, Ruth Vivian. "Practices and Problems in Typewriting: Kindergarten through Ninth Grade." Unpublished Master's thesis, Illinois State Normal University, 1951.

Banks, Z. I. "Teaching Typewriting to the Handicapped: An Experimental Approach." Journal of Business Education, XXXV (April, 1960), 326.

Baumeister, Alfred A. Mental Retardation: Appraisal, Education and Rehabilitation. Chicago: Aldine Publishing Co., 1968.

Baumgartner, Bernice B. A Curriculum Guide for Teachers of Trainable Mentally Handicapped Children. Springfield, Illinois: Illinois State Department of Public Instruction, 1955.

_____. Helping the Trainable Mentally Retarded Child. New York: Bureau of Publications, Teachers College, Columbia University, 1960.

Bayley, Nancy. "Developmental Problems of the Mentally Retarded Child." Prevention and Treatment of Mental Retardation. Edited by Irving Philips. New York: Basic Books, Inc., 1966.

Beavers, Elizabeth Blanche. "Typewriting as an Aid to Learning in the Elementary Grades." Unpublished Master's thesis, University of Oklahoma, 1940.

Becker, Herbert L. "Teaching Typewriting to the Slow Learners." United Business Education Forum, VI (May, 1952), 26, 37-9.

Begab, Michael J. "The Mentally Retarded and the Family." Prevention and Treatment of Mental Retardation. Edited by Irving Philips. New York: Basic Books, Inc., 1966.

Behrmann, Elmer H. "Organization of a Department of Special Education in the Archdiocese of St. Louis (1950-1952)." National Catholic Education Association Proceedings. Washington, D.C., 1954.

_____. Private interview held at the St. Louis Archdiocesan Special Education Office, St. Louis, Missouri, December 30, 1968.

Bennett, Annette. "An Analysis of Errors in Word Recognition Made by Retarded Readers." Journal of Educational Psychology, XXXIII (January, 1942), 25-38.

Benoit, E. Paul. "Application of Hebb's Theory to Understanding the Learning Disability of Children with Mental Retardation." Mental Retardation: Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston, 1964.

_____. "Relevance of Hebb's Theory of the Organization of Behavior to Educational Research on the Mentally Retarded." American Journal of Mental Deficiency, LXXI (July, 1966), 55-59.

Benton, Arthur L. "Psychological Evaluation and Differential Diagnosis." Mental Retardation: A Review of Research. Edited by Harvey A. Stevens and Rick Heber. Chicago: The University of Chicago Press, 1964.

Bereiter, Carl. "The Future of Individual Differences." Harvard Educational Review, XXXIX (Spring, 1969), 310-18.

Bernstein, Bebe. Readiness and Reading for the Retarded Child. New York: John Day Co., 1965.

Bibliography of World Literature on Mental Retardation, January, 1940-March, 1963. Edited by Rick Heber, Nancy Simpson, Ann Gibson, and Glenn E. Milligan. Washington, D.C.: President's Panel on Mental Retardation, U.S. Department of Health, Education, and Welfare, Public Health Service, 1963.

Bibliography of World Literature on Mental Retardation, March, 1963-December 31, 1964. Supplement. Edited by Rick F. Heber and Patrick J. Flanigan. Bethesda, Maryland: The National Institute of Child Health and Human Development, 1964.

Black, Alan H., and Davis, Leo J., Jr. "The Relationship Between Intelligence and Sensorimotor Proficiency in Retardates." American Journal of Mental Deficiency, LVII (July, 1966), 55-59.

Black, Hillel. "A School Where Children Teach Themselves." Saturday Evening Post, June 19, 1965, pp. 81-85.

Blackhurst, A. Edward. "Technology in Special Education--Some Implications." Exceptional Children, XXXI (May, 1965), 449-56.

Blackman, Leonard D. "Teaching Machines and the Mentally Retarded." School Life, XLVI (November, 1963), 10-12.

_____, and Capobianco, Rudolph J. "An Evaluation of Programmed Instruction with the Mentally Retarded Utilizing Teaching Machines." American Journal of Mental Deficiency, LXX (September, 1965), 262-69.

Blackstone, Earl G., and Smith, Sofrona L. Improvement of Instruction in Typewriting. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1949.

Blair, Glenn Myers; Jones, R. Stewart; and Simpson, Roy H. Educational Psychology. New York: The Macmillan Co., 1962.

Blatt, Burton. "Some Persistently Recurring Assumptions Concerning the Mentally Subnormal." Mental Retardation: Readings and Resources. New York: Holt, Rinehart and Winston, 1964.

Bliven, Bruce, Jr. The Wonderful Writing Machine. New York: Random House, 1954.

Bloomfield, Leonard, and Barnhart, Clarence L. Let's Read: A Linguistic Approach. Detroit: Wayne State University Press, 1961.

Book, William F. Learning to Typewrite with a Discussion of the Psychology and Pedagogy of Skill. New York: Gregg Publishing Company, 1925.

Borreca, Frank; Burger, Robert; Goldstein, Irwin; Mann, Horace; Present, Arthur; Simches, Gabriel; and Simches, Raphael. "A Workshop in Developing Lessons for Retarded Adolescents--A Program of Occupational Education." American Journal of Mental Deficiency, LV (July, 1950), 23-59.

Brabner, George, Jr. "The School Years--Program Design." Prevention and Treatment of Mental Retardation. Edited by Irving Philips. New York: Basic Books, Inc., 1966.

Brace, D. K. "Motor Learning in Feeble-Minded Girls." Research Quarterly. XIX (October, 1948), 269-75.

Bradford, Lilah Clark. "Does Typing Ability Depend on Mentality or Dexterity?" Journal of Business Education, V (December, 1930), 23-4.

Brown, Eleanor B. "Methods of Teaching Typewriting for the Handicapped," Methods of Teaching Typewriting. Thirty-eighth Yearbook of the Eastern Business Teachers Association. Edited by John L. Rowe. Somerville, New Jersey: Somerset Press, 1965. (a)

_____. "Selected References Concerning the Teaching of Typewriting to the Physically Handicapped." Journal of Business Education, XLI (December, 1965), 118. (b)

Bruner, Jerome S.; Olver, Rose R.; Greenfield, Patricia M.; Hornsby, Joan Rigney; Kenney, Helen J.; Maccoby, Michael; Modiano, Nancy; Mosher, Frederic A.; Olson, David R.; Potter, Mary C.; Reich, Lee C.; and Sonstroem, Anne McKinnon. Studies in Cognitive Growth. New York: John Wiley & Sons, Inc., 1966.

Bugelski, Bergen R. The Psychology of Learning. New York: Holt, Rinehart, 1956.

Burke, Elizabeth Fitzpatrick. "An Experimental Study of the Educational Use of the Typewriter in Second Grade." Unpublished Master's thesis, Loyola University, 1939.

Buros, Oscar Krisen, ed. Tests in Print. Highland Park, New Jersey: The Gryphon Press, 1961.

_____, ed. The Fifth Mental Measurements Yearbook. Highland Park, New Jersey: The Gryphon Press, 1963.

_____, ed. The Sixth Mental Measurements Yearbook. Highland Park, New Jersey: The Gryphon Press, 1965.

Burt, C. The Backward Child. New York: Appleton-Century, 1937.

Business Education Index. Edited by Louis C. Nanassy. New York: Gregg Division, McGraw-Hill Book Company, Inc., 1930-68.

Calhoun, Calfrey. "The Challenge of the Slow Learner." Business Education Forum, XVII (May, 1963), 25-6.

Candland, D. K., and Manning, S. A. "Elementary Learning Patterns in Mental Retardates." Training School Bulletin, LXII (August, 1966), 57-99.

Cantor, Gordon N., and Stacey, Chalmers L. "Manipulative Dexterity in Mental Defectives." American Journal of Mental Deficiency, LVI (October, 1951), 401-10.

Capehart, B. E., and McNish, Margaret. "The Typewriter as an Instructional Tool--What Research Says." National Elementary Principal, XXXVIII (February, 1959), 23-26.

Carr, John W., Jr. "The Instructor's Use of the Typewriter in Remedial Reading." Elementary School Journal, XLIV (April, 1949), 459-65.

Carlson, E. O., and Arveson, R. G. "Study of the Educable Mentally Retarded Student." Journal of Secondary Education, XXXVIII (December, 1963), 120-24.

Carrier, Neil A.; Malpass, Leslie F.; and Orton, Kenneth D. Responses of Bright, Normal and Retarded Children to Learning Tasks. Cooperative Research Project No. 578. Carbondale, Illinois: Southern Illinois University, 1961.

Cantrell, Robert H. "Serial Verbal Learning with the Mentally Retarded." Journal of Clinical Psychology, XIII (October, 1957), 369-72.

Cawley, J. F. "Reading Performance Among the Mentally Handicapped: A Problem in Assessment." Training School Bulletin, LXIII (May, 1966), 11-16.

Ceterski, Esther. "An Elementary Teacher Takes a Look at Typewriting." Business Education Forum, XIV (November, 1959), 13-14.

Charney, Leon, and LaCrosse, Edward. The Teacher of the Mentally Retarded. New York: John Day Co., 1965.

Chiappone, A. D. "Achievement and Adjustment in Mentally Retarded Individuals." High School Journal, XLVIII (December, 1964), 160-65.

Chipman, Catherine. "The Vocabulary of Mental Defectives." American Journal of Mental Deficiency, XL (April, 1935), 485-504.

Colahan, Wayne John. "Touch Typewriting in Two Elementary Schools." Unpublished Master's thesis, University of Chicago, 1935.

Conard, Edith Underwood. "A Study of the Influence of Manuscript Writing and of Typewriting on Children's Development." Journal of Educational Research, XXIX (December, 1935), 254-65.

Connor, Frances P., and Talbot, Mabel E. An Experimental Curriculum for Young Mentally Retarded Children. New York: Bureau of Publications, Teachers College, Columbia University, 1964.

Cooper, Octavine. "Teaching Small Children to Type." Nations Schools, XVIII (November, 1936), 23-26.

Cratty, B. J. "Some Perceptual Motor Attributes of Mentally Retarded Children and Youth." California Journal of Educational Research, XVIII (September, 1967), 188-93.

Cronbach, Lee J. "Heredity, Environment, and Educational Policy." Harvard Educational Review, XXXIX (Spring, 1969), 338-47.

Crow, James F. "Genetic Theories and Influences: Comments on the Value of Diversity." Harvard Educational Review, XXXIX (Spring, 1969), 301-09.

Cruickshank, William M. "Current Educational Practices with Exceptional Children." Education of Exceptional Children and Youth. Edited by William M. Cruickshank and G. Orville Johnson. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967. (a)

_____. "The Development of Education for Exceptional Children." Education of Exceptional Children and Youth. Edited by William M. Cruickshank and G. Orville Johnson. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967. (b

_____, and Johnson, G. Orville, eds. Education of Exceptional Children and Youth. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967.

Cummins, Rosemary. "Children Write with Type--Yesterday, Today, and Tomorrow." Business Education Meets the Challenges of Change. Fourth National Business Education Yearbook. Washington, D.C.: National Business Education Association, 1966.

Current, Richard N. The Typewriter and the Men Who Made It. Urbana, Illinois: The University of Illinois Press, 1954.

Curriculum Guide for Teachers of the Educable Mentally Handicapped. Compiled by Herbert Goldstein. Chicago: Illinois Council for Mentally Retarded Children, 1958.

Curtis, Marie E. "No Prerequisites for Typing Success." Business Education World, XVIII (September, 1937), 12-15.

Dasher, Doris R. "A Study of the Contribution of Typewriting to the Study of Language Arts in the Sixth Grade." Unpublished Master's thesis, University of Florida, 1950.

Dayle, Marie. "Perceptual Skill Development, a Possible Source for the Intellectually Handicapped." American Journal of Mental Deficiency, LXXI (March, 1967), 776-82.

Denny, M. Ray. "Research in Learning Performance." Mental Retardation: A Review of Research. Edited by Harvey A. Stevens and Rick Heber. Chicago: The University of Chicago Press, 1964.

Distefano, Michael K., Jr.; Ellis, Norman R.; and Sloan, William. "Motor Proficiency in Mental Defectives." Perceptual and Motor Skills, VIII (September, 1958), 231-34.

Dinsmore, Mayme. "Teaching Specialized Subjects to the Mentally Deficient." American Journal of Mental Deficiency, LVII (July, 1952), 50-56.

Dolch, Edward W. Methods in Reading. Champaign, Illinois: Garrard Press, 1955.

Doll, Edgar A. "Occupational Education for the Adolescent Mentally Deficient in a School Program." Exceptional Children, XXXV (October, 1968), 51-53, 76.

Doll, Eugene E. "A Historical Survey of Research and Management of Mental Retardation in the United States." Readings on the Exceptional Child. Edited by E. Philip Trapp and Philip Himelstein. New York:

Downie, N. M., and Heath, R. W. Basic Statistical Methods. New York: Harper & Row, Publishers, 1965.

Doyle, Marie. "Perceptual Skill Development, A Possible Source for the Intellectually Handicapped." American Journal of Mental Deficiency, LXXI (March, 1967), 776-82.

Dunn, Lloyd M. "Educable Mentally Retarded Children." Exceptional Children in the Schools. Edited by Lloyd M. Dunn. New York: Holt, Rinehart and Winston, Inc., 1963. (a)

_____, ed. Exceptional Children in the Schools. New York: Holt, Rinehart and Winston, Inc., 1963. (b)

_____. "A Historical Review of the Treatment of the Retarded." Mental Retardation: Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston, Inc., 1964.

Durrell, Donald D; Erickson, Lawrence W.; and Moore, Walter J. "The Manual Portable Typewriter as an Instructional Tool in the Elementary School Classroom." Research Summary. Royal McBee Corporation, 1960.

Dybwad, Gunnar. "Mental Retardation." Mental Retardation: Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston, 1964.

Education Index. New York: The H. W. Wilson Company, 1930-69.

Education of Elementary Children Who are of Retarded Mental Development. A Guide for Teachers. Jefferson City, Missouri: State Department of Education.

Edwards, Allen L. Experimental Design in Psychological Research. New York: Holt, Rinehart and Winston, Inc., 1960.

Egg, Maria. When a Child is Different. New York: The John Day Company, 1964.

Elkind, David. "Piagetian and Psychometric Conceptions of Intelligence." Harvard Educational Review, XXXIX (Spring, 1969), 319-37.

Ellis, Norman R. "The Stimulus Trace and Behavioral Inadequacy." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman R. Ellis. New York: McGraw-Hill Book Co., 1963 (a)

_____, ed. Handbook of Mental Deficiency: Psychological Theory and Research. New York: McGraw-Hill Book Company, 1963. (b)

_____, and Sloan, William. "Relationship Between Intelligence and Simple Reaction Time in Mental Defectives." Perceptual and Motor Skills, VII (June, 1957), 65-7.

Ellis, Robert S. Educational Psychology: A Problem Approach. New York: D. Van Nostrand Co., Inc., 1951.

Ensminger, E. E. "Language Development and the ITPA." Training School Bulletin, LXII (November, 1965), 97-107.

Erickson, Lawrence, and Clow, Cletus. "The Manual Portable Typewriter as a Tool of Learning with Fifth Grade Elementary School Pupils." Unpublished summary research report. New York: Teachers College, Columbia University, 1959.

Erickson, Marion J. The Mentally Retarded Child in the Classroom. New York: The Macmillan Company, 1965.

Ervin, F.P. "Research on Methods of Teaching Reading to the Mentally Handicapped." National Catholic Education Association Bulletin, LXVI (August, 1966), 468-72.

Espenschade, Anna A. "The Lincoln-Oseretsky Motor Development Scale." The Fifth Mental Measurements Yearbook. Edited by Oscar Krisen Buros. Highland Park, New Jersey: The Gryphon Press, 1963.

Espeseth, Vernon D. "Creativity in Typewriting Teaching Methodology Applied to Selected Physically Handicapped Students." Unpublished Master's Thesis, University of North Dakota, 1961.

Everett, T. Keach, Jr.; Fulton, Robert; and Gardner, William E., eds. Education and Social Crisis. New York: John Wiley & Sons, Inc., 1967.

Farber, Bernard. Mental Retardation: Its Social Context and Social Consequences. Boston: Houghton-Mifflin Co., 1968.

Ferguson, Margaret Ann, and Nalepa, Barbara N. Basic Gregg Typewriting, Book One: Keyboard Controls. Experimental Edition for Research Purposes Only Based on an Original Work by Dr. John L. Rowe and Dr. Alan C. Lloyd. New York: Gregg Division, McGraw-Hill Book Company, 1969.

Fernald, Grace M. Remedial Techniques in Basic School Subjects. New York: McGraw-Hill Book Company, 1943.

_____, and Keller, Helen Bass. "The Effect of Kinaesthetic Factors in the Development of Word Recognition in the Case of Non-Readers." Journal of Educational Research, IV (December, 1921), 355-77.

Findley, Warren G. "Metropolitan Achievement Test." The Sixth Mental Measurements Yearbook. Edited by Oscar Krisen Buros. Highland Park, New Jersey: The Gryphon Press, 1965.

Flavell, John H. The Developmental Psychology of Jean Piaget. Princeton, New Jersey: D. Van Nostrand Co., Inc., 1963.

Forrester, John J. "Differences Between Typed and Handwritten Elementary School Narrative Compositions." Unpublished Ph.D. dissertation, New York University, 1933.

Francis, Robert J., and Rarick, G. Lawrence. "Motor Characteristics of the Mentally Retarded." American Journal of Mental Deficiency, LXIII (March, 1959), 792-811.

Frederick, Anna Barbara. "Should We Teach Typewriting to Mental Defectives?" Balance Sheet, XXXVIII (November, 1956), 111-14.

Freeman, G. L. "Studies in the Psycho-Physiology of Transfer, the Problem of Identical Elements." Journal of Experimental Psychology, XXI (November, 1937), 521-32.

Frostig, Marianne. Personal letter. February 27, 1970. Grand Forks, North Dakota.

_____; Lefever, D. Welty; and Whittlesey, R. B. "A Developmental Test of Visual Perception for Evaluating Normal and Neurologically Handicapped Children." Perceptual Motor Skills, XII (June, 1961), 383-94.

Gallagher, Anna Mae. Keyboard Town Story. Pittsburgh: A. D. Walter Adv. & Publishing, Inc., 1961.

_____. Keyboard Town Story. Chicago: Parkinson Division, Follett Publishing Company, 1968.

Gardner, W. I. "Reactions of Intellectually Normal and Retarded Boys After Experimentally Induced Failure--A Social Learning Theory Interpretation." Unpublished Ph.D. dissertation, George Peabody College for Teachers, Nashville, Tennessee, 1958.

Gates, Arthur I., and Pritchard, Miriam C. Teaching Reading to Slow-Learning Pupils. New York: Bureau of Publication, Teachers College, Columbia University, 1942.

Garton, Malinda D. Teaching the Educable Mentally Retarded: Practical Methods. Springfield, Illinois: Charles C. Thomas, Publisher, 1964.

Gehring, Virgil D. "Conflicting Opinions in Teaching the Slow Learner in Vocational Business Education as Revealed in the Literature." Unpublished Master's thesis, University of North Dakota, 1962.

Glasser, William. Schools Without Failure. New York: Harper and Row, 1969.

Goldstein, Herbert, and Seigle, Dorothy M. "Characteristics of Educable Mentally Handicapped Children." Mental Retardation: Readings and Resources. New York: Holt, Rinehart and Winston, 1964.

Goldstein, Irwin, and Mann, Horace. "An Occupational Vocation for Retarded Adolescents." American Journal of Mental Deficiency, LIV (July, 1949), 38-72.

Good, Carter V. Introduction to Educational Research. New York: Appleton-Century-Crofts, 1963.

Gratz, J. E. "Eight-Year-Olds Learn to Type." Journal of Business Education, XXXV (March, 1960), 266-68.

Groden, Gerald. "Mental Ability, Reaction Time, Perceptual Motor and Motor Abilities in Handicapped Children." Perceptual and Motor Skills, XXVIII (February, 1969), 27-30.

Guskin, Samuel. "Social Psychologies of Mental Deficiency." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman Ellis. New York: McGraw-Hill Book Co., 1963.

Haefner, Ralph. The Typewriter in the Primary and Intermediate Grades. New York: The Macmillan Company, 1932.

_____. "Typewriting and the 3 R's." American School Board Journal, XCV (September, 1937), 28-30.

Hanower, Frances M. "Business Education Helps the Handicapped." Balance Sheet, XXXIII (January, 1953), 206-09.

Hardaway, Mathilde. "Prognostic or Aptitude Tests for Skill Subjects." Business Education World, XV (March, 1945), 371-73.

Hart, Leo B. "Typing Belongs in the Elementary Curriculum." Business Education World, XL (January, 1960), 9-11.

Harlow, Steven D. "Every Teacher a Special Education Teacher." The College of Education Record, The University of North Dakota, LIV (April, 1969), 1957-60.

Heath, S. R., Jr. "Railwalking Performance as Related to Mental Age and Etiological Types." American Journal of Psychology, LV (April, 1942), 240-47.

Hebb, D. O. The Organization of Behavior. New York: John Wiley & Sons, Inc., 1949.

Heber, Rick F. "Expectancy and Expectancy Changes in Normal and Mentally Retarded Boys." Unpublished Ph.D. dissertation, George Peabody College for Teachers, Nashville, Tennessee, 1957.

_____. "The Educable Mentally Retarded." Behavioral Research on Exceptional Children. Edited by Samuel A. Kirk and Bluma B. Weiner. Washington, D.C.: The Council for Exceptional Children, NEA, 1963.

_____. "Definition of Mental Retardation." Mental Retardation: Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart, and Wilston, 1964.

Heffernan, E. P. "Relationship Between the Ability of Elementary School Pupils to Use the Typewriter and Sex, Chronological Age, Mental Age, Spelling Ability, Reading Ability." Unpublished Master's thesis, University of Pittsburgh, 1932.

Herrick, Virgil E. "Perception and Symbols in Skill Learning by Mentally Retarded Children." School Life, XL (January, 1958), 13-14.

Hodges, Robert W.; Siegel, Paul M.; and Rossi, Peter H. "Occupational Prestige in the United States." Class, Status and Power. Edited by Reinhard Bendix and Martin Lipset Seymour. New York: Free Press, 1966.

Hoffman, Lois Wladis, and Hoffman, Martin L., eds. Review of Child Development Research, Vol. II. New York: Russell Sage Foundation, 1966.

Holman, Portia. "The Relation Between General Mental Development and Manual Dexterity." British Journal of Psychology, XXIII (January, 1933), 279-83.

Howe, Clifford E. "A Comparison of Motor Skills of Mentally Retarded and Normal Children." Exceptional Children, XXIII (April, 1959), 352-54.

Hultsch, Catherine L. "Potentials of the Trainable Child." Childhood Education, XL (March, 1964), 357-61.

Hunt, J. McV. Intelligence and Experience. New York: The Ronald Press, 1961.

_____. "Has Compensatory Education Failed? Has It Been Attempted?" Harvard Educational Review, XXXIX (Spring, 1969), 279-300.

Hutchings, Mabel M. "A Study of Typewriting as Offered in Elementary Schools." Unpublished Master's thesis, Northwestern University, 1950.

Hutt, Max L., and Gibby, Robert Gwyn. The Mentally Retarded Child: Development, Education and Treatment. Boston: Allyn and Bacon, Inc., 1965.

Illinois Test of Psycholinguistic Abilities (ITPA). Urbana, Illinois: University of Illinois Press, 1963.

Ingram, Christine P. Education of the Slow-Learning Child. New York: The Ronald Press, 1960.

Inskeep, Annie Dolman. Teaching Dull and Retarded Children. New York: The Macmillan Co., 1926.

Irwin, O. C. "Peabody's Test." Training School Bulletin, LXII (November, 1964), 126-31.

Ismail, A. H., and Gruber, Joseph J. Motor Aptitude and Intellectual Performance. Columbus, Ohio: Charles E. Merrill Books, Inc., 1963.

Itard, Jean M. The Wild Boy of Aveyron. Translated by George and Muriel Humphrey. New York: Appleton-Century-Crofts, 1962.

Jacobs, J. N. "A Study of Performance of the Slow Learner in the Cincinnati Public Schools on Mental and Achievement Tests." American Journal of Mental Deficiency, LXII (September, 1957), 238-43.

Jaskari, Sylvia. "An Experimental Study in Typewriting in the Middle Grades." Unpublished Master's thesis, University of North Dakota, 1954.

Jensen, Arthur A. "How Much Can We Boost IQ and Scholastic Achievement?" Harvard Educational Review, XXXIX (Winter, 1969), 1-123.

Johnson, Doris J., and Myklebust, Helmer R. Learning Disabilities: Educational Principles and Practices. New York: Grune & Stratton, Inc., 1967.

Johnson, G. O. "Generalization (Transfer of a Principle)," in Comparative Studies of Some Learning Characteristics in Mentally Retarded and Normal Children of the Same Mental Age. Cited in Behavioral Research on Exceptional Children by Samuel A. Kirk and Bluma B. Weiner. Washington, D. C.: The Council for Exceptional Children, NEA, 1963.

_____. "The Relationship of Learning Rate and Developmental Rate." Exceptional Children, XXVI (October, 1959), 68-69.

_____. "Special Education for the Mentally Handicapped--a Paradox." Exceptional Children, XXIX (October, 1962), 62-69.

_____. Education for the Slow Learner. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963. (a)

_____. "Psychological Characteristics of the Mentally Retarded." Psychology of Exceptional Children and Youth. Edited by William M. Cruickshank. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963. (b)

_____. "Guidance for Exceptional Children." Education of Exceptional Children and Youth. Edited by William M. Cruickshank and G. Orville Johnson. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967. (a)

_____. "The Education of Mentally Retarded Children." Education of Exceptional Children and Youth. Edited by William M. Cruickshank and G. Orville Johnson. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967. (b)

_____, and Blake, Kathryn A. Learning Performance of Retarded and Normal Children. Syracuse, New York: Syracuse University, 1960.

Jones, H. E. Motor Performance and Growth. Berkeley: University of California Press, 1949.

Jordan, Thomas E., ed. Perspectives in Mental Retardation. Carbondale and Edwardsville, Illinois: Southern Illinois University Press, 1966.

_____, and deCharms, Richard. "The Achievement Motive in Normal and Mentally Retarded Children." American Journal of Mental Deficiency, LXIV (November, 1959), 457-66.

Kagan, Jerome S. "Inadequate Evidence and Illogical Conclusions." Harvard Educational Review, XXXIX (Spring, 1969), 274-77.

Karnes, Merle B.; Clarizio, Harvey F.; and Zehrbach, Richard Reid. The Effects of Typing Instruction on the Personality and Achievement of Educable Mentally Handicapped Children. Champaign, Illinois: Community Unit 4 Schools, Department of Special Services, 1963.

_____. "The Effects of Typing Instruction on the Personality and Achievement of Educable Mentally Handicapped Children." Exceptional Children, XXXI (September, 1964), 27-32

Kasper, Marita, and Brady, Mary. "We Experimented With Grouped Typing Classes." Business Education World, XLIII (September, 1962), 25-26.

Kennedy, John F. Cited in The Teacher of the Mentally Retarded. Leon Charney and Edward LaCrosse. New York: The John Day Company, 1965.

Kenney, John W. "Preparing Teachers of Mentally Handicapped Children." American Journal of Mental Deficiency. LVIII (April, 1954), 566-72.

Kidd, John W. "Some Unwarranted Assumptions in the Education and Habilitation of Handicapped Children." Education and Training of the Mentally Retarded, I (April, 1966), 54.

_____; Cross, Thomas J.; and Higgenbotham, Jerry L. "The World of Work for the Educable Mentally Handicapped.: Exceptional Children, XXXIII (May, 1967), 648-49.

Kirk, Samuel. "The Influence of Manual Tracing on the Learning of Simple Words in the Case of the Subnormal Boys." Journal of Educational Psychology, XXIV (July, 1934), 525-35.

_____. Teaching Reading to Slow-Learning Children. Boston: Houghton-Mifflin Company, 1940.

_____. Educating Exceptional Children. Boston: Houghton-Mifflin Company, 1962.

_____. "The Effects of Remedial Reading on the Educational Progress and Personality Adjustment of High-Grade Mentally Deficient Problem Children: Ten Case Studies." Behavioral Research on Exceptional Children. Edited by Samuel A. Kirk and Bluma B. Weiner. Washington, D. C.: The Council for Exceptional Children, NEA, 1963.

_____, and Bateman, Barbara. "Diagnosis and Remediation of Learning Disabilities." Exceptional Children, XXIX (October, 1962), 73-78.

_____., and Johnson, G. Orville. Educating the Retarded Child. Boston: Houghton-Mifflin Company, 1951.

_____., and Weiner, Bluma B. Behavioral Research on Exceptional Children. Washington, D. C.: The Council for Exceptional Children, NEA, 1963.

Kitson, Harry D. Commercial Education in Secondary Schools. Boston: Ginn & Co., 1929.

Kodman, Frank, Jr. "Sensory Processes and Mental Deficiency." Handbook of Mental Deficiency: Psychological Theory and Research. New York: McGraw-Hill Book Company, 1963.

Kohler, Gerald. "Two Motivators for the Mentally Retarded: Adding Machine and Typewriter." Instructor, LXVII (June-July, 1968), 42.

Kolstoe, Oliver P. "Sensory Stimulation Versus Specific Responses." Mental Retardation: Readings and Resources. Edited by Jerome H. Rothstein. New York: Holt, Rinehart and Winston, 1964.

Krevolin, Nathan. "Teaching Typewriting to Handicapped Elementary School Children." Typing News, XXXIV (Spring, 1964), 1,7.

_____. "How Can We Best Implement Elementary School Typing Courses?" Business Education World, XLVI (March, 1966), 11.

Kulcinski, Louis H. "The Relation of Intelligence to the Learning of Fundamental Muscular Skills." Research Quarterly, XVI (December, 1945), 266-76.

Lamb, Marion. Your First Year of Teaching Typewriting. Cincinnati: South-Western Publishing Company, 1949.

Lant: Beatrice. "Some Dynamic Aspects of Success and Failure." Psychological Monographs, LIX, 1945.

Lemee, Harry. "Vocational Education for the Atypical Child." School and Community, LII (April, 1966), 18-19.

_____. "Providing Programs for the Mentally Retarded Individual." School and Community, LIII (July, 1967), 20-21.

Levy, Sheldon G. Inferential Statistics in the Behavioral Sciences. New York: Holt, Rinehart and Winston, Inc., 1968.

Lillis, David L. "The Effects of Motor Development Lessons on Mentally Retarded Children." American Journal of Mental Deficiency, LXXII (May, 1968), 803-08.

Lincoln-Oseretsky Motor Development Scale. Chicago: C. H. Stoelting Company, 1954.

Lipman, Ronald S. "Learning: Verbal, Perceptual-Motor and Classical Conditioning." Handbook of Mental Deficiency: Psychological Theory and Research. New York: McGraw-Hill Book Company, 1963.

Lovitt, Elizabeth T. "Typewriting for the Disadvantaged." Balance Sheet, L (November, 1968), 112-16.

Lyman, Howard B. Test Scores and What They Mean. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.

Mackie, Romaine P. "Spotlighting Advances in Special Education." Exceptional Children, XXXII (October, 1965), 77.

MacMillan, Donald L. "Motivational Differences: Cultural-Familial Retarded vs. Normal Subjects on Expectancy for Failure." American Journal of Mental Deficiency, LXXIV (September, 1969), 254-58.

Maher, Brendan A. "Intelligence and Brain Damage." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman R. Ellis. New York: McGraw-Hill Book Co., 1963.

Malpass, Leslie F. "Programmed Instruction for Retarded Children." Mental Retardation: Appraisal, Education, and Rehabilitation. Edited by Alfred A. Baumeister. Chicago: Aldine Publishing Co., 1968.

_____. "Motor Skills in Mental Deficiency." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman R. Ellis. New York: McGraw-Hill Book Co., 1963.

_____; Gilmore, Alden S.; Hardy, Miles W.; and Williams, Charles F. Comparison of Two Automated Teaching Procedures for Retarded Children. Cooperative Research Project Number 1267. Tampa, Florida: University of South Florida, 1963.

Marianne Frostig Developmental Test of Visual Perception, Third Edition. Palo Alto, California: Consulting Psychologists Press, Inc., 1964.

Mayo, Leonard. "Philosophy and Recommendations of the President's Panel on Mental Retardation Relating to Education, Vocational Rehabilitation and Training." Exceptional Children, XXIX (May, 1963), 425-30.

McCoy, George F. "Some Ego Factors Associated with Academic Success and Failure of Educable Mentally Retarded Pupils." Exceptional Children, XXX (October, 1963), 80-84.

Mental Retardation Abstracts, 1968-1969. Washington, D. C.: U. S. Department of Health, Education and Welfare.

Mental Retardation 67: Report of the President's Committee on Mental Retardation. John W. Gardner, Chairman. Washington, D. C.: Government Printing Office, 1967.

Mental Retardation 68: Report of the President's Committee on Mental Retardation. Wilbur J. Cohen, Chairman. Washington, D. C.: Government Printing Office, 1968.

Mental Retardation 69: Report of the President's Committee on Mental Retardation. Robert H. Finch, Chairman. Washington, D. C.: Government Printing Office, 1969.

Merrick, Nellie L. "Touch Typewriting for Children." Educational Administration and Supervision Including Teacher Training, XXI (March, 1935), 226-29.

Metropolitan Achievement Test. New York: Harcourt, Brace & World, Inc., 1959.

Milgram, N. A., and Turth, H. G. "Response and Competition in Paired Associate Learning by Educable and Trainable Retarded Children." American Journal of Mental Deficiency, LX (May, 1966), 849-54.

Miller, M. Alice. "Relation of the I.Q. to Success in Learning Typewriting." Curriculum Study and Education Research Bulletin, III (January, 1929), 135-40.

Montessori, Maria. The Montessori Method. Translated by Anne E. George. New York: Frederick A. Stokes Co., 1912.

Moore, Omar Khayyam. "Autotelic Responsive Environments and Exceptional Children." Experience, Structure & Adaptability. Edited by O. J. Harvey. New York: Springer Publishing Co., Inc., 1966.

Morrison, Phyllis Caulfield. "A Study of Certain General Educational Values of Typewriting in the Junior High School." Unpublished Ph.D. dissertation, University of Michigan, 1958.

Moss, James W. "Failure Avoiding and Success-Striving Behavior in Mentally Retarded and Normal Children." Unpublished Ph.D. dissertation. George Peabody College for Teachers, Nashville, Tennessee, 1958.

Mussen, P. H., ed. Handbook of Research Methods in Child Development. New York: John Wiley Co., 1960.

Myers, Marjorie M. "The Effect of Dexterity and Intelligence on Skill in Typewriting." Unpublished Master's thesis, University of Michigan, 1951.

National Business Education Quarterly, Fall and Spring Issues, 1963-1969.

Nimnicht, Glen. "Low-Cost Typewriter Approach Helps Pre-Schoolers Type Words and Stories." Nations Schools, LXXX (December, 1967), 34-37.

Norris, Raymond C.; Hattel, John V.; and Brooks, Sadye. "Comparability of Peabody Picture Vocabulary Test Scores Under Group and Individual Administration." Journal of Educational Psychology, LI (April, 1960), 87-91.

Olson, M. Adeline. "An Analysis of Factors in Determining Physical Impediments in Typewriting." Journal of Business Education, XXIX (January, 1954), 173.

_____, and Jaskari, S. "Grade Pupils Become Proficient Typists." Balance Sheet, XXXVIII (October, 1955), 56-57, 65.

Ostle, Bernard. Statistics in Research. Ames, Iowa: The Iowa State University Press, 1963.

Patterson, O. E., Jr. "Kiddos at the Keys." Texas Outlook, XXIII (November, 1939), 62.

Peabody Picture Vocabulary Test (PPTV). Minneapolis: American Guidance Service, Inc., 1959.

Philips, Irving, ed. Prevention and Treatment of Mental Retardation. New York: Basic Books, Inc., 1966.

Plan for North Dakota's Mentally Retarded: A Report to the Governor, Legislature and Citizens of North Dakota. Bismarck, North Dakota: Division of Mental Health and Retardation Services, State Department of Health, 1966.

Platt, Libbie W. "The I. Q. in Relation to the Ability to Typewrite." High Points, XX (May, 1938), 40 44.

Preparing Research Reports for the Bureau of Education for the Handicapped. Washington, D. C.: Bureau of Education for the Handicapped, U. S. Office of Education, March, 1969.

Price, James E. "Automated Teaching Programs With Mentally Retarded Students." American Journal of Mental Deficiency. LXVIII (July, 1963), 69-72.

Psychological Abstracts. Washington, D. C.: The American Psychological Association, Inc., 1967-1969.

Psychological Monographs. Edited by John F. Dashiell, XLIX (1945), Washington, D. C.: The American Psychological Association, Inc.

Purkhiser, Frances Reed. "Teaching Typewriting to a Cerebral Palsied Student." Unpublished Master's degree, San Francisco State College, 1959.

Quay, Lorene Childs. "Academic Skills." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman R. Ellis. New York: McGraw-Hill Book Co., 1963.

Rabin, Herbert M. "The Relationship of Age, Intelligence and Sex to Motor Proficiency in Mental Defectives." American Journal of Mental Deficiency, LXIII (November, 1957), 507-16.

Rahe, Harves. Typewriting Research Index. New York: Gregg Division, McGraw-Hill Book Co., 1963.

_____. Shorthand-Secretarial Research Index. New York: Gregg Division, McGraw-Hill Book Company, 1965.

Reader's Guide to Periodical Literature. New York: The H. W. Wilson Co., 1930-1969.

Report of the Task Force on Education and Rehabilitation. The President's Panel on Mental Retardation. Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1962.

Ricketts, Mary M. "Typewriting in the Lower Grades." Balance Sheet, XXXI (March, 1950, 292-94.

Robinson, Halbert B., and Robinson, Nancy M. The Mentally Retarded Child: A Psychological Approach. New York: McGraw-Hill Book Co., 1965.

Ross, Alan O. The Exceptional Child in the Family. New York: Grune & Stratton, 1964.

Rothstein, Jerome H., ed. Mental Retardation: Readings and Resources. New York: Holt, Rinehart and Winston, 1964.

Rowe, John L. "An Experiment in Teaching Portable Electric Typewriting to Third and Fourth Grade Students." The College of Education Record, University of North Dakota, XLIV (November, 1958).

_____. "Readin', Typin', and 'Rithmetic." Business Education World, XXXIX (January, February, March, 1959).

_____. "Psychological Foundations of Motor Skill Building as Applied to Typewriting." The College of Education Record, University of North Dakota, XLVI (January, 1961).

_____, ed. Methods of Teaching Typewriting. Thirty-eighth Yearbook of the Eastern Business Teachers Association. Somerville, New Jersey: Somerset Press, 1965.

Russell, John L., Jr. "Typing in the Middle Grades." The Grade Teacher, LXXI (March, 1954), 106.

Russen, Allien R., and Wanous, Samuel J. Philosophy and Psychology of Teaching Typewriting. Cincinnati: South-Western Publishing Co., 1960.

_____. "Principles of Learning Applied to Typewriting Skill Development." Balance Sheet, XLVIII (November, 1966), 100-103.

Sarason, Seymour B. Psychological Problems in Mental Deficiency. New York: Harper and Brothers, 1949.

Scobee, Verda Johnson. "Typewriters Build Morale." Midland Schools, LXI (May, 1947), 243.

Sears, Pauline. "Levels of Aspiration in Academically Successful and Unsuccessful Children." Journal of Abnormal and Social Psychology, XL (October, 1940), 498-536.

Serena, Sister Mary. "Learning Potential of the Retarded Child." National Apostolate for the Mentally Retarded (NAMR), I (June, 1969), 4-7.

Sheperd, George. "What Research on the Mentally Retarded Has to Say." Journal of Secondary Education, XLI (December, 1966), 339-42.

Sherman, Mandel. Intelligence and its Deviations. New York: Ronald Press, 1945.

Shintani, Munro. "The Spelling Ability of the Mentally Handicapped." Unpublished Ph.D. dissertation, The University of Iowa, 1967.

Shriver, Eunice Kennedy. "Hope for Retarded Children." The Saturday Evening Post, CCXXXV (September 22, 1962), 71-74.

Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Co., Inc., 1956.

Silberman, Charles E. "The Remaking of American Education." Fortune (April, 1961), 125-30.

Silvey, Gerald R. "A Course of Study for a Class in Typewriting for the Mentally Handicapped Child in the Junior High School." Unpublished Master's thesis, University of Southern California, Los Angeles, 1955.

_____. "A Course of Study for a Class in Typewriting for the Mentally Handicapped Child in the Junior High School." National Business Education Quarterly, XXV (October, 1956), 54-55.

Six-Hour Retarded Child. A Report on a Conference on Problems of Education of Children in the Inner City, sponsored by The President's Committee on Mental Retardation and Bureau of Education for the Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare. Washington, D. C., 1969.

Slaughter, Stella Stillson. The Mentally Retarded Child and His Parents. New York: Harper & Brothers, 1960.

_____. The Educable Mentally Retarded Child and His Teacher. Philadelphia: F. A. Davis Co., 1964.

Sloan, William. "Motor Proficiency and Intelligence." Unpublished Ph.D. dissertation, Northwestern University, 1950.

_____. "Motor Proficiency and Intelligence." American Journal of Mental Deficiency, LV (July, 1951), 394-406.

Smith, Gordon B. "An Experiment in Elementary School Typing." Balance Sheet, XLII (November, 1961), 104.

Smith, James O. Effects of a Group Language Development Program Upon the Psycholinguistic Ability of Educable Mental Retardates. Peabody College Special Education Research Monograph Series, Number 1. Nashville, Tennessee: George Peabody College for Teachers, 1962.

_____. "Group Language Development for Educable Mentally Retardates." Exceptional Children, XXIX (October, 1962), 95-102.

Smith, Robert M. Clinical Teaching: Methods of Instruction for the Retarded. New York: McGraw-Hill Book Co., 1968.

Sonstroem, Anne McKinnon. "On the Conservation of Solids." Studies in Cognitive Growth. Edited by Jerome S. Bruner, et al. New York: John Wiley & Sons, Inc., 1966.

Spearman, C. The Abilities of Man. New York: The Macmillan Co., 1927.

Spencer, Herbert L. "An Experimental Study Showing the Relative Influence of the Typewriter on the Various Phases of Reading Ability Among Elementary School Pupils." Unpublished Ph.D. dissertation, University of Pittsburgh, 1934.

Spivack, George. "Perceptual Processes." Handbook of Mental Deficiency: Psychological Theory and Research. Edited by Norman R. Ellis. New York: McGraw-Hill Book Co., 1963.

Stackpole, Azuba. "A Syllabus in Typewriting for Disabled Students." Journal of Business Education, XX (September, 1944), 17-18.

Stein, Julian U. "Physical Fitness in Relation to Intelligence Quotient, Social Distance, and Physique of Intermediate School Mentally Retarded Boys." Unpublished Ph.D. dissertation, George Peabody College for Teachers, Nashville, Tennessee, 1966.

_____, and Pangle, Roy. "What Research Says About Psychomotor Function of the Retarded." Journal of Health, Physical Education and Recreation, XXXVII (April, 1966), 36-38.

Stevens, Harvey A., and Heber, Rick, eds. Mental Retardation: A Review of Research. Chicago: The University of Chicago Press, 1964.

_____. "Field is Rich . . . and Ready for Harvest; Presidential Address." American Journal of Mental Deficiency, LXX (July, 1965), 4-15.

Stolurow, Lawrence M. "Automation in Special Education." Exceptional Children, XXVIII (October, 1960), 78-83.

_____. "Teaching Machines and Special Education." Educational and Psychological Measurement, XX (Autumn, 1960), 429-48, 53.

Talbot, Mabel E. Edouard Seguin: A Study of An Educational Approach to the Treatment of Mentally Defective Children. New York: Bureau of Publications, Teachers College, Columbia University, 1964.

Tarjan, George. "Mental Retardation: Implications for the Future." Prevention and Treatment of Mental Retardation. Edited by Irving Philips. New York: Basic Books, Inc., 1966.

Tate, M. W. "Use of the Typewriter in Remedial Reading and Language." Elementary School Journal, XLIII (April, 1943), 481-85.

Tetreault, Gerard E. "Typewriting/Dictation to Boost Reading Skill." Instructor, LXXIX (February, 1970), 116, 118.

Thanos, George E., and McConnell, Arleigh. "High School Program for the Educable Mentally Retarded." Journal of Secondary Education, XLII (November, 1967), 316-20.

Theodore, Sister Mary, O. S. F. The Challenge of the Retarded Child. Milwaukee: The Bruce Publishing Co., 1959.

Thorne, Gareth D. Understanding the Mentally Retarded. New York: McGraw-Hill Book Co., 1965.

Tondow, Murray. "Computers in Special Education--An Introduction." Exceptional Children, XXXI (November, 1964), 113-16.

Tonne, Herbert; Popham, Estelle L.; and Freeman, M. Herbert. Methods of Teaching Business Subjects. New York: McGraw-Hill Book Co., 1965.

Tootle, John C. "Typewriting in the Written Communication Activities of the Fifth Grade." Unpublished Ph.D. dissertation, Ohio State University, 1961.

Towne, Blanche M. "An Individual Curve of Learning: A Study in Typewriting." Journal of Experimental Psychology, V (April, 1922), 79-92.

Trapp, E. Philip, and Himelstein, Philip, eds. Readings on the Exceptional Child. New York: Appleton-Century-Crofts, Inc., 1967.

Tredgold, A. F. A Textbook of Mental Deficiency. Baltimore: Williams and Wilkins Co., 1963.

Tucker, Woodie L. "Typewriting--A Method of Providing for Individual Differences in Rehabilitation." United Business Education Forum, VI (April, 1952), 26.

Tudyman, Al, and Groelle, M. A Functional Basic Word List for Special Pupils. Pittsburgh: Stanwix House, Inc., 1958.

Turnure, J., and Zigler, E. "Outer Directedness in the Problem-Solving of Normal and Retarded Children." Journal of Abnormal-Social Psychology, LXIX (October, 1964), 427-36.

Tuttle, W. W. "The Determination of Ability for Learning Typewriting." Journal of Educational Psychology, XIV (March, 1923), 177-81.

Uhzicker, Cecilia E. "An Experimental Study of the Effects of the Use of the Typewriter on Beginning Reading." Contributions to Education, Number 610. New York: Columbia University, 1934.

Van Dalen, Deobold B. Understanding Educational Research. New York: Gregg Division, McGraw-Hill Book Company, Inc., 1966.

Vavra, Minnie A. "Success in Typewriting." Journal of Educational Psychology, XVI (October, 1925), 487-92.

Vergason, G. A. "Retention in Retarded and Normal Subjects as a Function of Amount of Original Training." American Journal of Deficiency, LXVIII (March, 1964), 623-29. (a)

_____. "Some Implications of Research for the Education of the Mentally Retarded." The High School Journal, XLVIII (December, 1964), 152-59. (b)

Vineland Social Maturity Scale. Minneapolis: Educational Test Bureau, 1953.

Wade, Elizabeth. "New Approach to Education of the Mentally Retarded and the Slow Learner." Childhood Education, XLIII (November, 1966), 182-83.

Walker, Helen M., and Lev, Joseph. Statistical Inference. New York: Henry Holt and Company, 1953.

Wallin, J. E. Wallace. Education of Mentally Handicapped Children. New York: Harper & Row, 1955.

_____. "Recent Progress in the Field of Mental Retardation." Journal of Educational Research, LIX (September, 1965), 3-9.

Wechsler, David. The Measurement and Appraisal of Adult Intelligence. Baltimore: The Williams and Wilkins Co., 1958.

Wechsler Intelligence Scale for Children (WISC). New York: Psychological Corporation, 1949.

Wells, Frederic Lyman. "On the Psychomotor Mechanisms of Typewriting." American Journal of Psychology, XXVII (January, 1916), 47-70.

Widdop, John Henry. "The Motor Performance of Educable Mentally Retarded Children with Particular Reference to the Identification of Factors Associated with Individual Differences in Performance." Unpublished Ph.D. dissertation, University of Wisconsin, 1967.

Willey, Roy DeVerle, and Waite, Kathleen Barnette. The Mentally Retarded Child: Identification, Acceptance, and Curriculum. Springfield, Illinois: Charles C. Thomas Publisher, 1964.

Winer, B. J. Statistical Principles in Experimental Design. New York: McGraw-Hill Book Co., 1962.

Wolensky, G. F. "Issues in Curriculum Development for the Educable Mentally Retarded." Training School Bulletin, LXIV (May, 1967), 5-11.

Wood, Benjamin D., and Freeman, Frank N. An Experimental Study of the Educational Influence of the Typewriter in the Elementary School Classroom. New York: The Macmillan Co., 1932.

Wood, Winifred Grant. "Relation Between IQ and the Rate of Attainment in Typewriting." Unpublished Master's thesis, University of Southern California, Los Angeles, 1928.

Young, William M. "Why are Slow Learners Slow?" Journal of Business Education, XXVII (December, 1951), 155-56.

Yuen, Jack. "Methodology for Elementary School Typewriting." Methods of Teaching Typewriting. Thirty-eighth Yearbook of the Eastern Business Teachers Association. Somerville, New Jersey: Somerset Press, 1965.

Zender, B. F. "Soviet Schools Try an Experiment." CTA Journal (California Teacher Association Journal), LXII (January, 1966), 30-31.

Zigler, Edward. "Mental Retardation: Current Issues and Approaches." Review of Child Development Research. Vol. I. Edited by Lois Wladis Hoffman and Herman L. Hoffman. New York: Russell Sage Foundation, 1966. (a)

_____. "Research on Personality Structure in the Retardate." International Review of Research in Mental Retardation. Vol. I. Edited by Norman R. Ellis. New York: Academic Press, 1966. (b)

Zintz, Miles V. Corrective Reading. Dubuque, Iowa: W. C. Brown Company, 1966.